SERVICE NOTES

Roland

VersaSTUDIO BN-20/BN-20A/BN-20D

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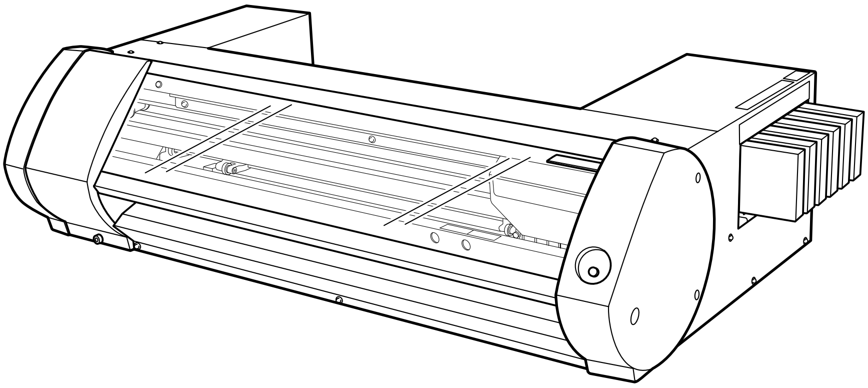

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Roland DG Corporation

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Revision Record

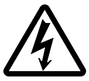
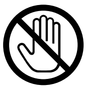
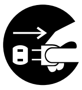
Revision No.	Date	Description of Changes	Approver	Issuer
0	2011.9.30	First Edition	Sawamura	Tamaki
1	2011.10.13	[4-1 SERVICE APPLICATION]>[I/S Tab] has been revised. [4-11 FLUSHING POSITION POSITION ADJUSTMENT] has been added.	Sawamura	Tamaki
2	2011.12.13	1-2 FRAME and BED, 1-3 DRIVE UNIT, 1-6 WIPE and CAP SYSTEMs Parts has been revised. [4-1 SERVICE APPLICATION]>[I/S Tab] has been revised.	Sawamura	Misako
3	2012.3.23	Sect1 has been revised. (1-1 COVER / 1-2 FRAME and BED / 1-3 DRIVE UNIT / 1-6 WIPE and CAP SYSTEMs / 1-8 ACCESSORY) 4-3 HEAD ALIGNMENT has been revised.	Sawamura	Yamane
4	2012.7.27	Sect1(1-2 FRAME and BED/1-4 HEAD CARRIAGE/1-6 WIPE and CAP SYSTEMs) 3-18 GUIDE FLANGE REPLACEMENT 6-17 SERVICE CALL has been added.	Sawamura	Yamane
5	2012.10.10	Sect1 has been revised. (1-6 WIPE and CAP SYSTEMs) 3-18 MEDIA CLAMP REPLACEMENT	Sawamura	Umemoto
6	2012.10.31	3-9 BOARDS REPLACEMENT has been revised.	Sawamura	Yuko
7	2013.1.23	1-7 INK SYSTEM Parts has been revised.	Onoda	Yuko
8	2013.6.28	1-8 ACCESSORY Parts has been revised. 6-17 SERVICE CALL has been revised.	Onoda	Umemoto
9	2014.11.12	1-4 HEAD CARRIAGE Part has been added. 1-5 CHASSIS has been revised.	Onoda	Ito
10	2015.1.30	2-5 MAINTENANCE PARTS LIST_Electrical Parts, 4-1 SERVICE APPLICATION has been revised. Sect6 has been revised. (6-1 WHITE FINE LINE / BANDING / MISSING DOT / SCRATCHY PRINTING / BLURRED PRINTING, 6-4 PARTICULAR COLOR IS NOT PRINTED AT ALL)	Kawai	Natsume
11	2015.4.8	1-1 COVER Part has been added.	Onoda	Ito
12	2015.9.4	1-8 ACCESSORY Parts has been revised. 3-9 BOARDS REPLACEMENT has been revised.	Kawai	Hosoya
13	2015.10.28	1-8 ACCESSORY Part error correction.	Onoda	Ito
14	2015.12.10	1-6 WIPE and CAP SYSTEMS Part has been revised.	Onoda	Ito
15	2016.9.14	1 Structure & Spare Parts has been migrated to the Parts Finder.	Kawai	Shin
16	2017.6.23	3-17 RIBBON CABLE BETWEEN MAIN BOARD AND HEAD REPLACEMENT has been revised.	Nimura	Saito
17	2018.5.25	5-1 Special Tools Part has been revised.	Nimura	Saito
18	2018.7.11	7-1 INSTALLATION CHECK LIST 7-2 MAINTENANCE CHECK LIST	Nimura	Saito
19	2018.8.6	3 REPLACEMENT OF MAIN PARTS Referential time has been revised	Nimura	Saito
20	2020.10.30	3-6 CARRIAGE MOTOR REPLACEMENT, 3-7 FEED MOTOR REPLACEMENT Grease name corrected. 3-17 RIBBON CABLE BETWEEN MAIN BOARD AND HEAD REPLACEMENT Order of folding ribbon cables in reference figure changed.	Nimura	Saito

Revision No.	Date	Description of Changes	Approver	Issuer
21	2021.5.19	7-2 Maintenance Check List Errors in writing have been corrected.	Nimura	Saito
22	2021.10.12	BN-20A added	Nimura	Saito
23	2022.7.27	3-9 BOARD REPLACEMENT SW POWER SUPPLY REPLACEMENT (41V) Notes for power board added.	Nimura	Saito
24	2022.8.17	3-9 BOARD REPLACEMENT SW POWER SUPPLY REPLACEMENT (41V) Notes for power board serial number corrected.	Nimura	Saito
25	2022.11.30	BN-20D added 2-1 WIRING MAP 3-4 CAPTOP REPLACEMENT 3-16 INK TUBE REPLACEMENT (CIRCULATING PUMP LINE) 4-1 SERVICE APPLICATION (I/S Tab) HISTORY MENU (MOTOR GROUP) 6-8 TROUBLESHOOTING 7-1 INSTALLATION CHECKLIST 7-2 MAINTENANCE CHECKLIST 7-3 SPECIFICATION	Nimura	Saito
26	2023.6.12	3-4-1 CAPTOP REPLACEMENT Changed from (BN-20/20A) to (BN-20/20A/20D) Notes added about cutting tube 3-4-2 CAPTOP REPLACEMENT Changed from (BN-20D) to (BN-20D User Replacement)	Nimura	Saito

To Ensure Safe Work

About ⚠**WARNING** and ⚠**WARNING** Notices.

⚠**WARNING**	Used for instructions intended to alert the operator to the risk of death or severe injury should the unit be used improperly.
⚠**CAUTION**	Used for instructions intended to alert the operator to the risk of injury or material damage should the unit be used improperly. * material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

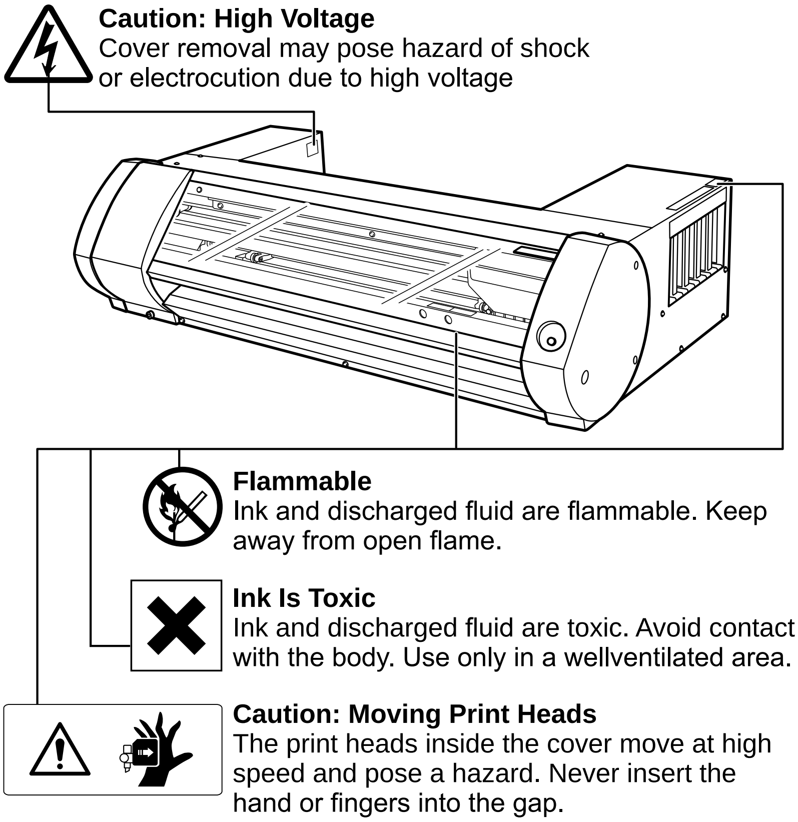
	The ⚠ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. The symbol at left means “danger of electrocution”.
	The 🛇 symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. The symbol at left means not to touch.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. The symbol at left means the power-cord plug must be unplugged from the outlet.

In addition to the ⚠**WARNING** and ⚠**CAUTION** symbols, the symbols shown below are also used.

📝 : Tips and advise before the adjustment.

About Warning Labels Affixed to the Unit

Warning labels are affixed to make areas of danger immediately clear. The meanings of these labels are as follows. Be sure to heed their warnings. Also, never remove the labels or allow them to become obscured.



Caution: High Voltage
Cover removal may pose hazard of shock or electrocution due to high voltage

Flammable
Ink and discharged fluid are flammable. Keep away from open flame.

Ink Is Toxic
Ink and discharged fluid are toxic. Avoid contact with the body. Use only in a wellventilated area.

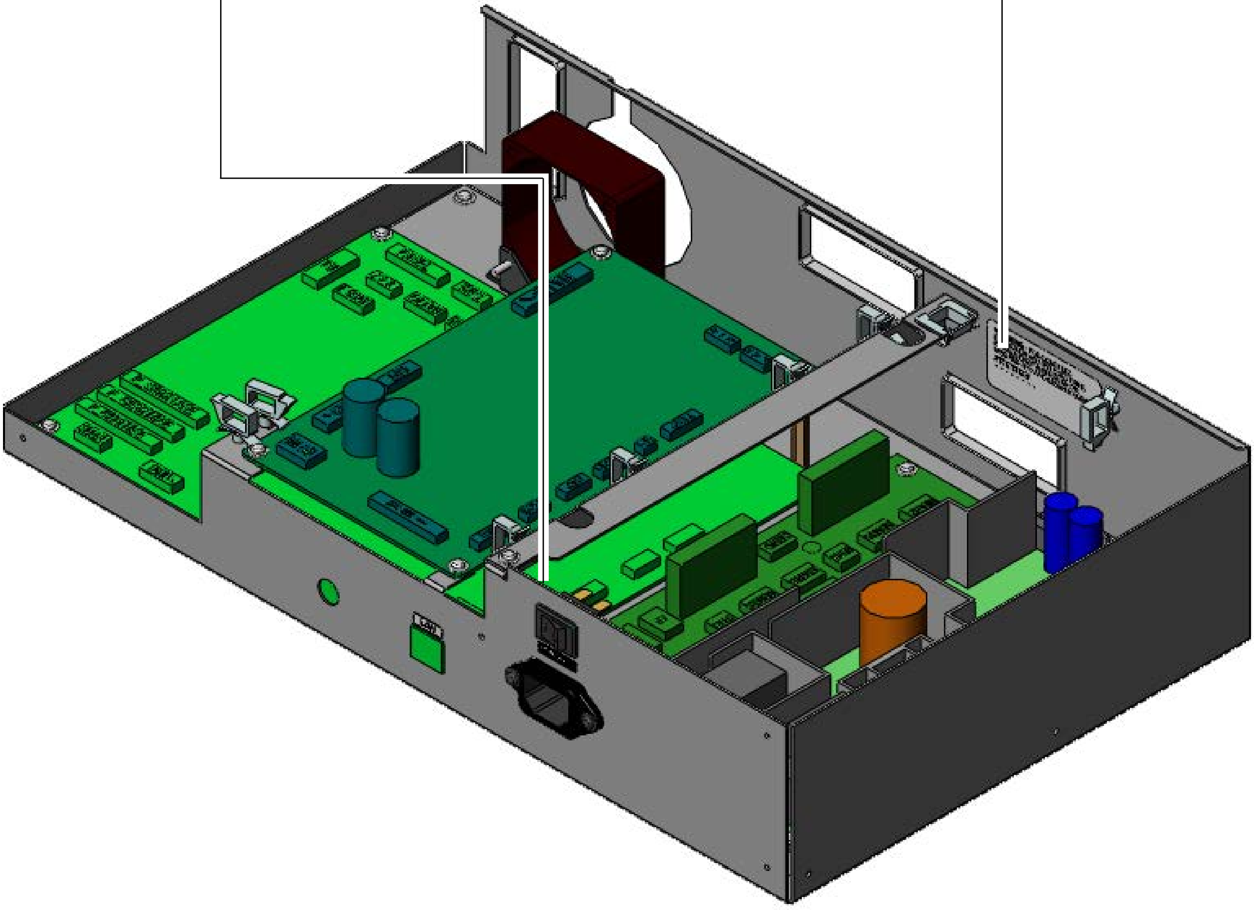
Caution: Moving Print Heads
The print heads inside the cover move at high speed and pose a hazard. Never insert the hand or fingers into the gap.

WARNING - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH FUSE OF THE SPECIFIED TYPE AND CURRENT RATING.

ATTENTION - AFIN D'ÉVITER TOUT RISQUE D'INCENDIE, N'UTILISER QUE DES FUSIBLES DE LA TAILLE ET DU TYPE SPÉCIFIÉS. F80L HS

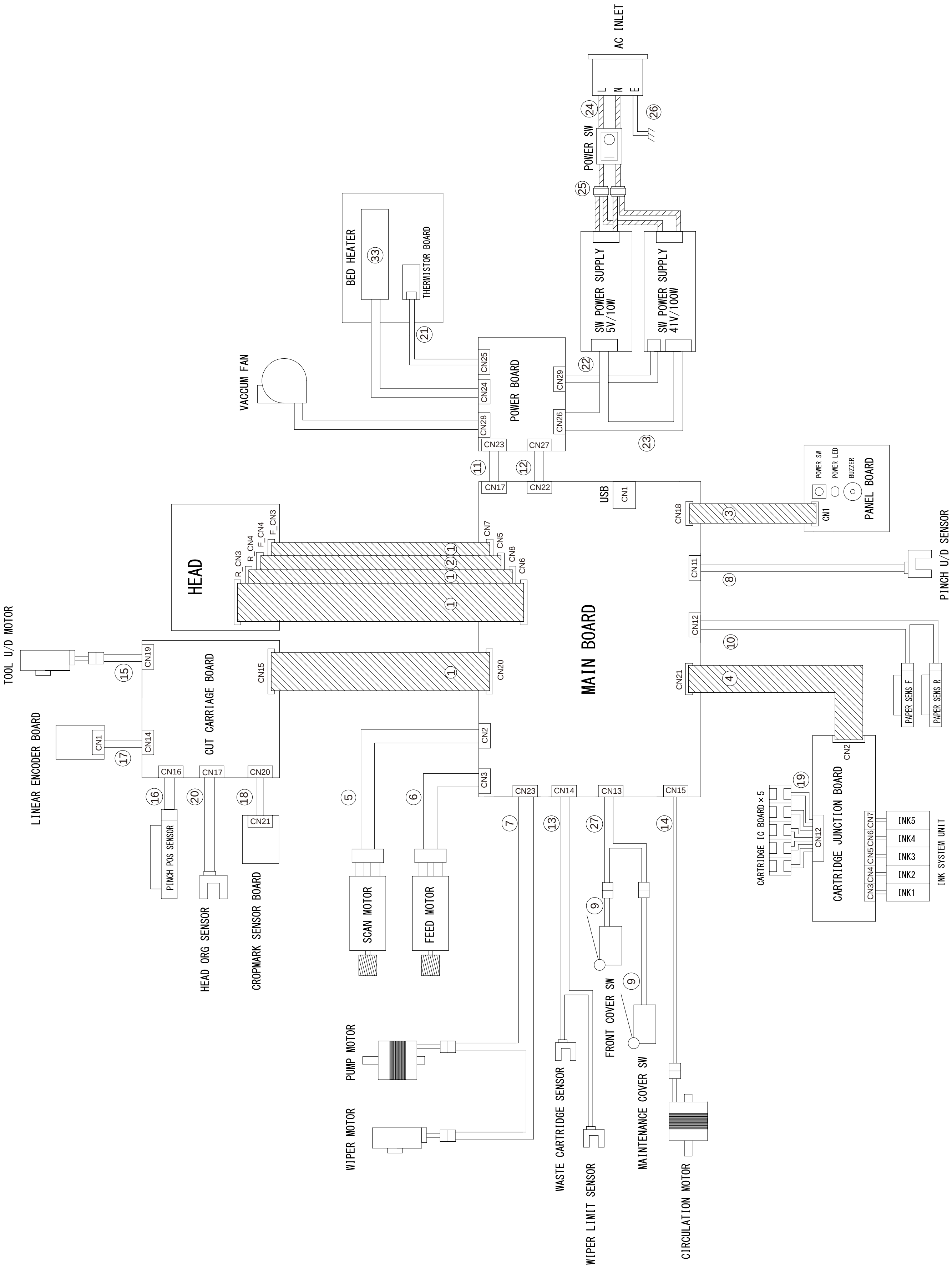
⚠ Electric charge.
Do not touch when power is on.

⏚ The wiring terminal untended for connection of the protective earthing conductor associated with the supply wiring.
Do not disconnect the cable of this terminal except the time of replacement.



2-1 WIRING MAP ⚠22

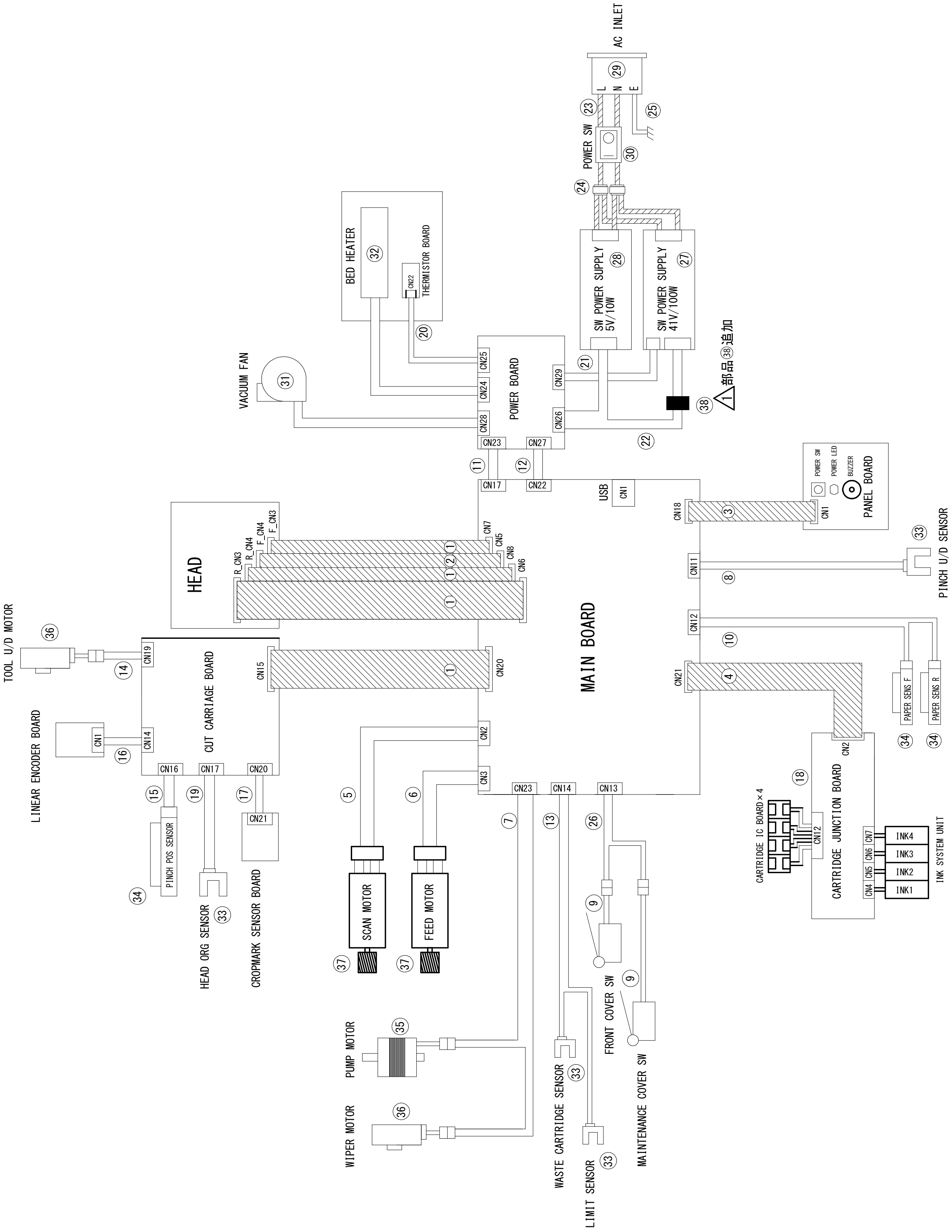
BN-20 WIRING MAP


AC INLET
L
N
E
POWER SW
㉔
㉕
㉖
SW POWER SUPPLY 5V/10W
SW POWER SUPPLY 41V/100W
㉒
㉓
BED HEATER
㉝
THERMISTOR BOARD
㉑
VACCUM FAN
POWER BOARD
CN25
CN24
CN28
CN29
CN26
CN23
CN27
⑪
⑫
CN17
CN22
USB
CN1
CN18
③
CN1
POWER SW
POWER LED
BUZZER
PANEL BOARD
PINCH U/D SENSOR
CN11
⑧
CN12
⑩
PAPER SENS F
PAPER SENS R
CN21
④
CN2
CARTRIDGE JUNCTION BOARD
CN12
CN3
CN4
CN5
CN6
CN7
INK5
INK4
INK3
INK2
INK1
INK SYSTEM UNIT
CARTRIDGE IC BOARD×5
⑲
MAIN BOARD
HEAD
R_CN3
R_CN4
F_CN4
F_CN3
CN7
CN5
CN8
CN6
①
②
CN20
CN15
CUT CARRIAGE BOARD
CN19
CN14
CN16
CN17
CN20
TOOL U/D MOTOR
⑮
LINEAR ENCODER BOARD
CN1
⑰
⑯
⑳
⑱
PINCH POS SENSOR
HEAD ORG SENSOR
CN21
CROPMARK SENSOR BOARD
CN2
CN3
⑤
⑥
SCAN MOTOR
FEED MOTOR
CN23
CN14
CN13
CN15
⑦
⑬
㉗
⑭
⑨
PUMP MOTOR
WIPER MOTOR
WASTE CARTRIDGE SENSOR
WIPER LIMIT SENSOR
FRONT COVER SW
MAINTENANCE COVER SW
CIRCULATION MOTOR

BN-20 CABLE LIST

	Parts No.	Parts Name
1	1000007717	CABLE-CARD,29P1 1750L BB HIGH-V
2	1000007716	CABLE-CARD,28P1 1750L BB HIGH-V
3	1000007714	CABLE-CARD,12P1 500L BB
4	1000007715	CABLE-CARD,25P1 1400L BB
5	1000007710	CABLE-ASSY,SCAN MOTOR BN-20
6	1000007701	CABLE-ASSY,FEED MOTOR BN-20
7	1000007709	CABLE-ASSY,PUMP MOTOR BN-20
8	1000007708	CABLE-ASSY,PINCH UD SENS BN-20
9	1000007697	CABLE-ASSY,COVER SW BN-20
10	1000007706	CABLE-ASSY,PAPER SENS BN-20
11	1000007703	CABLE-ASSY,HEATER CONTROL BN-20
12	1000007705	CABLE-ASSY,MAIN POWER BN-20
13	1000007713	CABLE-ASSY,WIPER LIMIT SENS BN-20
14	1000007699	CABLE-ASSY,CURCULATION MOTOR BN-20
15	1000007712	CABLE-ASSY,TOOL UD MOTOR BN-20
16	1000007707	CABLE-ASSY,PINCH POS SENS BN-20
17	1000007704	CABLE-ASSY,LINEAR ENC BN-20
18	1000007698	CABLE-ASSY,CROPMARK SENSOR BN-20
19	1000007787	CABLE-ASSY,INK IC BN-20
20	1000007702	CABLE-ASSY,HEAD ORG SENS BN-20
21	1000007711	CABLE-ASSY,THERMISTER BN-20
22	1000008066	CABLE-ASSY,41V CONTROL BN-20
23	1000007700	CABLE-ASSY,DC-POWER BN-20
24	1000007695	CABLE-ASSY,AC-POWER1 BN-20
25	1000007696	CABLE-ASSY,AC-POWER2 BN-20
26	1000008063	CABLE-ASSY,EARTH BN-20
27	1000008155	CABLE-ASSY, COVER FM BN-20
33	1000008576	ASSY,CORD HEATER BN-20

BN-20A WIRING MAP


AC INLET
L
N
E
POWER SW
SW POWER SUPPLY 5V/10W
SW POWER SUPPLY 41V/100W
1 部品㊳追加
BED HEATER
THERMISTOR BOARD
CN22
VACUUM FAN
POWER BOARD
CN25
CN24
CN28
CN29
CN26
CN23
CN27
CN17
CN22
USB
CN1
POWER SW
POWER LED
BUZZER
PANEL BOARD
CN18
CN11
CN12
CN21
CN7
CN5
CN8
CN6
CN20
CN2
CN3
CN23
CN14
CN13
MAIN BOARD
HEAD
R_CN3
R_CN4
F_CN4
F_CN3
CN15
CUT CARRIAGE BOARD
CN19
CN14
CN16
CN17
CN20
CN21
TOOL U/D MOTOR
LINEAR ENCODER BOARD
PINCH POS SENSOR
HEAD ORG SENSOR
CROPMARK SENSOR BOARD
SCAN MOTOR
FEED MOTOR
PUMP MOTOR
WIPER MOTOR
WASTE CARTRIDGE SENSOR
WIPER LIMIT SENSOR
FRONT COVER SW
MAINTENANCE COVER SW
PINCH U/D SENSOR
PAPER SENS F
PAPER SENS R
CARTRIDGE JUNCTION BOARD
CARTRIDGE IC BOARD×4
CN2
CN12
CN7
CN6
CN5
CN4
INK4
INK3
INK2
INK1
INK SYSTEM UNIT
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
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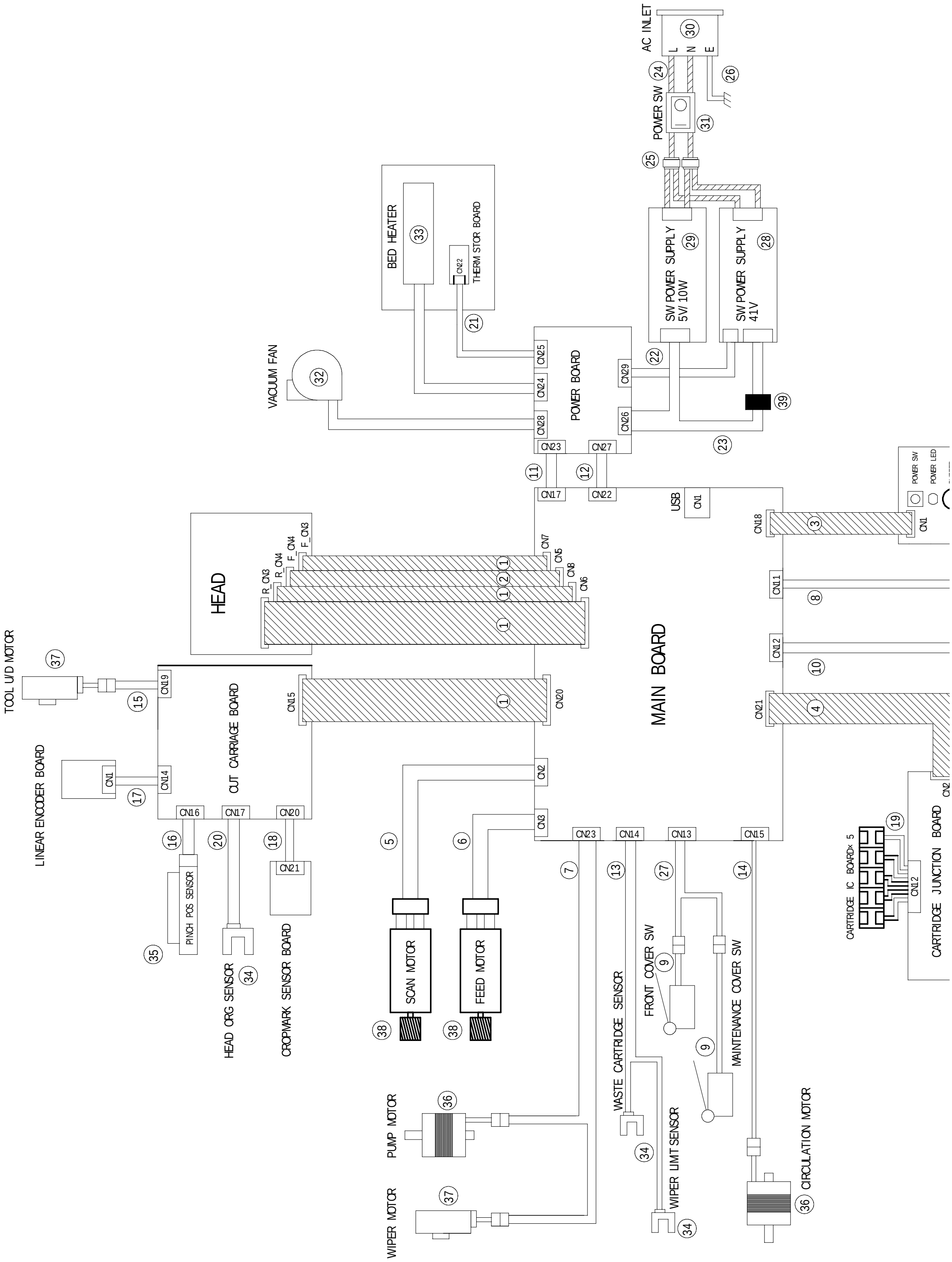
㊲
㊳

BN-20A **CABLE LIST**

	Parts No.	Parts Name
1	1000007717	CABLE-CARD,29P1 1750L BB HIGH-V
2	1000007716	CABLE-CARD,28P1 1750L BB HIGH-V
3	1000007714	CABLE-CARD,12P1 500L BB
4	1000007715	CABLE-CARD,25P1 1400L BB
5	1000007710	CABLE-ASSY,SCAN MOTOR BN-20
6	1000007701	CABLE-ASSY,FEED MOTOR BN-20
7	1000007709	CABLE-ASSY,PUMP MOTOR BN-20
8	1000007708	CABLE-ASSY,PINCH UD SENS BN-20
9	1000007697	CABLE-ASSY,COVER SW BN-20
10	1000007706	CABLE-ASSY,PAPER SENS BN-20
11	1000007703	CABLE-ASSY,HEATER CONTROL BN-20
12	1000007705	CABLE-ASSY,MAIN POWER BN-20
13	1000007713	CABLE-ASSY,WIPER LIMIT SENS BN-20
14	1000007712	CABLE-ASSY,TOOL UD MOTOR BN-20
15	1000007707	CABLE-ASSY,PINCH POS SENS BN-20
16	1000007704	CABLE-ASSY,LINEAR ENC BN-20
17	1000007698	CABLE-ASSY,CROPMARK SENSOR BN-20
18	1000007787	CABLE-ASSY,INK IC BN-20
19	1000007702	CABLE-ASSY,HEAD ORG SENS BN-20
20	1000007711	CABLE-ASSY,THERMISTER BN-20
21	1000008066	CABLE-ASSY,41V CONTROL BN-20
22	1000007700	CABLE-ASSY,DC-POWER BN-20
23	1000007695	CABLE-ASSY,AC-POWER1 BN-20
24	1000007696	CABLE-ASSY,AC-POWER2 BN-20
25	1000008063	CABLE-ASSY,EARTH BN-20
26	1000008155	CABLE-ASSY, COVER FM BN-20
27	1000007763	POWER UNIT,LFA100F-J1R2Y-D41
28	1000007764	POWER UNIT,LFA10F-5-J1
29	13429702	INLET AC-P01CF01 15A250V
30	13129170	SW,POWER AJ7201BF
31	1000007789	FAN,9BAM24HA2-11
32	1000008576	ASSY,CORD HEATER BN-20
33	1000006689	SENSOR-INTERRUPTER,EE-SX4009-P1
34	1000007767	SENSOR,PS124TL1
35	22435106	MOTOR,103-593-1041
36	1000007732	MOTOR,KBL42SLB520D
37	1000007731	MOTOR,10S274-FP38
38	1000024937	FILTER(E),TFN-081813

BN-20D WIRING MAP △25

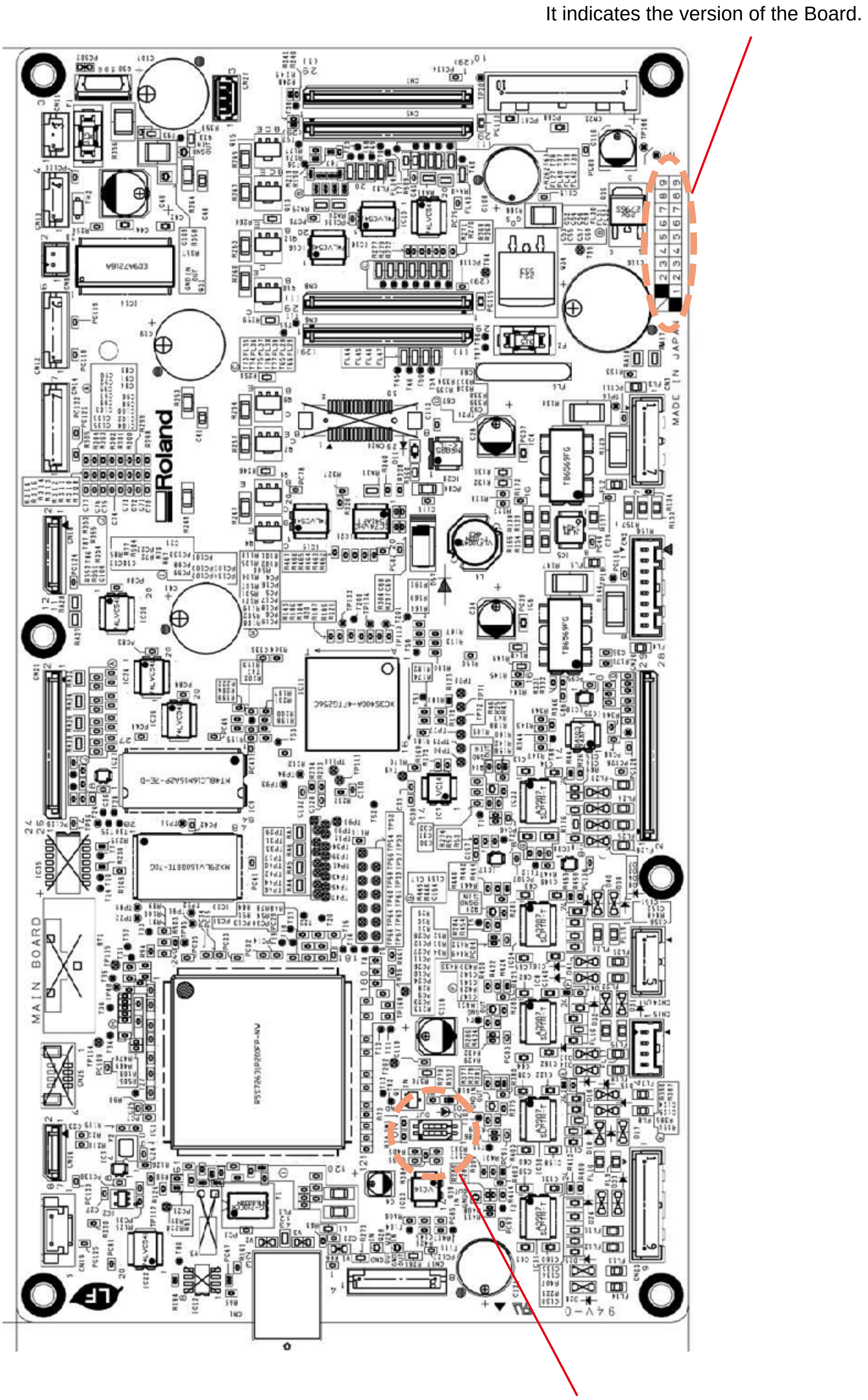

AC INLET
30
L
N
E
POWER SW
24
31
25
26
SW POWER SUPPLY 5V/ 10W
29
SW POWER SUPPLY 41V
28
BED HEATER
33
CN22
THERMISTOR BOARD
21
VACUUM FAN
32
POWER BOARD
CN25
CN24
CN28
CN29
CN26
CN23
CN27
22
39
23
11
12
CN17
CN22
USB
CN1
MAIN BOARD
HEAD
R_CN3
R_CN4
F_CN4
F_CN3
CN7
CN5
CN8
CN6
1
2
CN18
CN11
CN12
CN21
3
8
10
4
POWER SW
POWER LED
CN1
CN2
CN20
CN15
CUT CARRIAGE BOARD
CN19
CN14
CN16
CN17
CN20
TOOL U/D MOTOR
37
15
LINEAR ENCODER BOARD
CN1
17
16
20
18
CN21
PINCH POS SENSOR
35
HEAD ORG SENSOR
34
CROPMARK SENSOR BOARD
CN2
CN3
5
6
SCAN MOTOR
FEED MOTOR
38
CN23
CN14
CN13
CN15
7
13
27
14
FRONT COVER SW
9
MAINTENANCE COVER SW
WASTE CARTRIDGE SENSOR
WIPER LIMIT SENSOR
34
CIRCULATION MOTOR
36
PUMP MOTOR
36
WIPER MOTOR
37
CARTRIDGE IC BOARD× 5
19
CN12
CARTRIDGE JUNCTION BOARD

BN-20D **CABLE LIST** △25

No.	Parts No.	Parts name
1	1000007717	CABLE-CARD,29P1 1750L BB HIGH-V
2	1000007716	CABLE-CARD,29P1 1750L BBK HIGH-V
3	1000007714	CABLE-CARD,12P1 1500L BB
4	1000007715	CABLE-CARD,25P1 1400L BB
5	1000007710	CABLE-ASSY,SCAN MOTOR BN-20
6	1000007701	CABLE-ASSY,FEED MOTOR BN-20
7	1000007709	CABLE-ASSY,PUMP&WIPE MOTOR BN-20
8	1000007708	CABLE-ASSY,PINCH UD SENS BN-20
9	1000007697	CABLE-ASSY,COVER SW BN-20
10	1000007706	CABLE-ASSY,PAPER SENS BN-20
11	1000026907	CABLE-ASSY,HEATER CONTROL CG2288_00
12	1000007705	CABLE-ASSY,MAIN POWER BN-20
13	1000007713	CABLE-ASSY,WIPER&WASTE SENS BN-20
14	1000007699	CABLE-ASSY,CIRCULATION MOTOR BN-20
15	1000007712	CABLE-ASSY,TOOL UD MOTOR BN-20
16	1000007707	CABLE-ASSY,PINCH POS SENS BN-20
17	1000007704	CABLE-ASSY,LINEAR ENC BN-20
18	1000007698	CABLE-ASSY,CROPMARK SENSOR BN-20
19	1000007787	CABLE-ASSY,INK IC BN-20
20	1000007702	CABLE-ASSY,HEAD ORG SENS BN-20
21	1000007711	CABLE-ASSY,THERMISTER BN-20
22	1000008066	CABLE-ASSY,41V CONTROL BN-20
	1000026569	CABLE-ASSY,41V CONTROL BN-20_01
23	1000007700	CABLE-ASSY,DC-POWER BN-20
24	1000018023	CABLE-ASSY,AC-POWER1 BN-20_01
25	1000018024	CABLE-ASSY,AC-POWER2 BN-20_01
	1000026570	CABLE-ASSY,AC-POWER2 BN-20_02
26	1000008063	CABLE-ASSY,EARTH BN-20
27	1000008155	CABLE-ASSY, COVER FM BN-20
28	1000012802	POWER UNIT, LFA100F-48-HJ1R2YD41_01
	1000010044	POWER UNIT, ZWS240BP-48/R (41)
29	1000007764	POWER UNIT, LFA10F-5-J1
30	13429702	INLET AC-P01CF01 15A250V
31	13129170	SW,POWER AJ7201BF
32	1000007789	FAN, 9BAM24HA2-11
33	1000008576	ASSY, CORD HEATER BN-20
34	1000006689	SENSOR-INTERRUPTER, EE-SX4009-P1
35	1000007767	SENSOR, PS124TL1
36	22435106	MOTOR,103-593-1041
37	1000007732	MOTOR,KBL42SLB520D
38	1000007731	MOTOR,10S274-FP38
39	1000024937	FILTER(E), TFN-081813

2-2 MAIN BOARD △22 △25

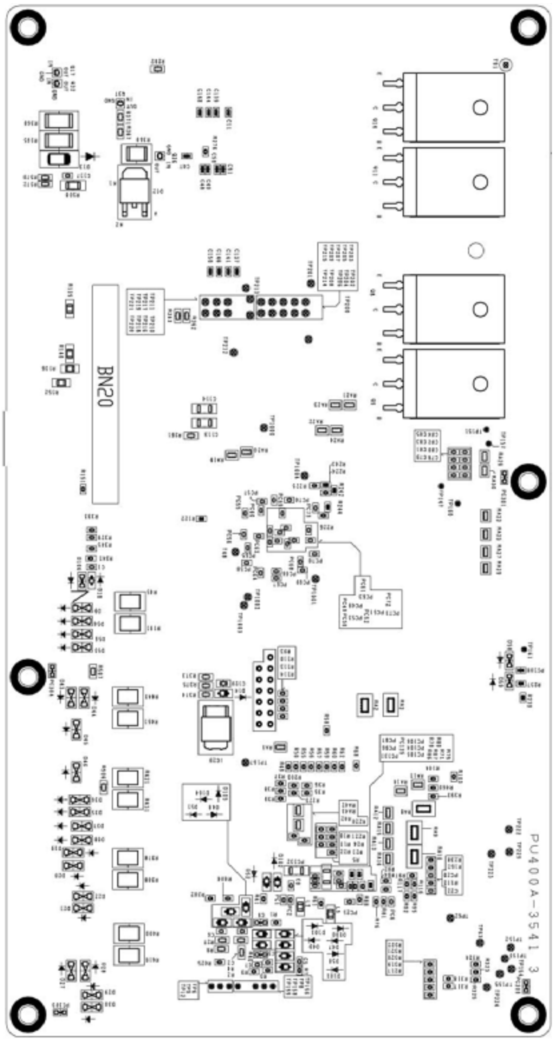
BN-20/BN-20A/BN-20D MAIN BOARD_Arrangement Diagram (Component Side)


It indicates the version of the Board.

Roland
MADE IN JAPAN
MAIN BOARD

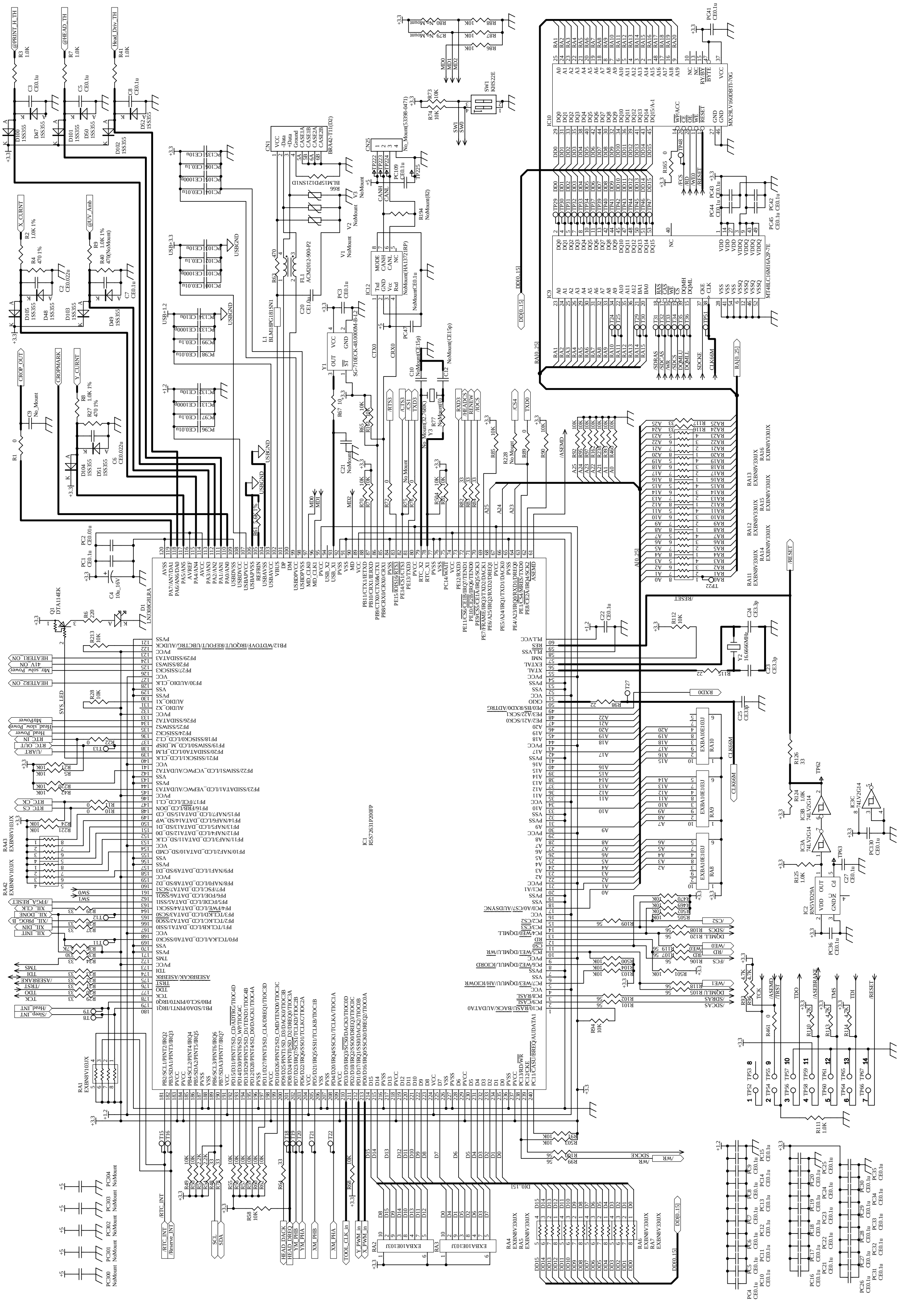
DIP SW	BN-20/BN-20D		BN-20A	
	Bit 1	Bit 2	Bit 1	Bit 2
	OFF	OFF	OFF	ON

MAIN BOARD_Arrangement Diagram (Soldering Side)

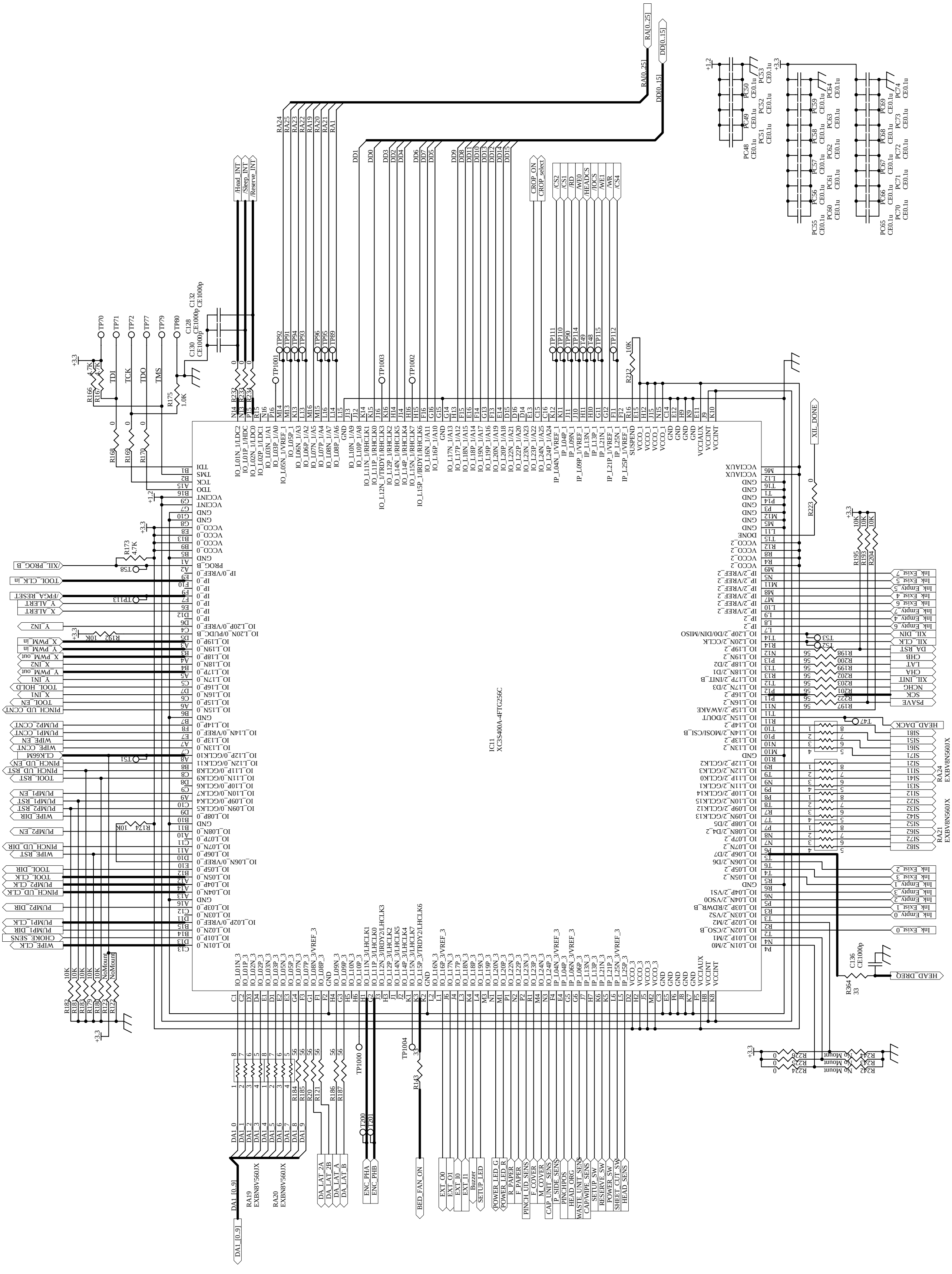

BN20
PU400A-3541 3

BN-20/BN-20A/BN-20D CIRCUIT DIAGRAM

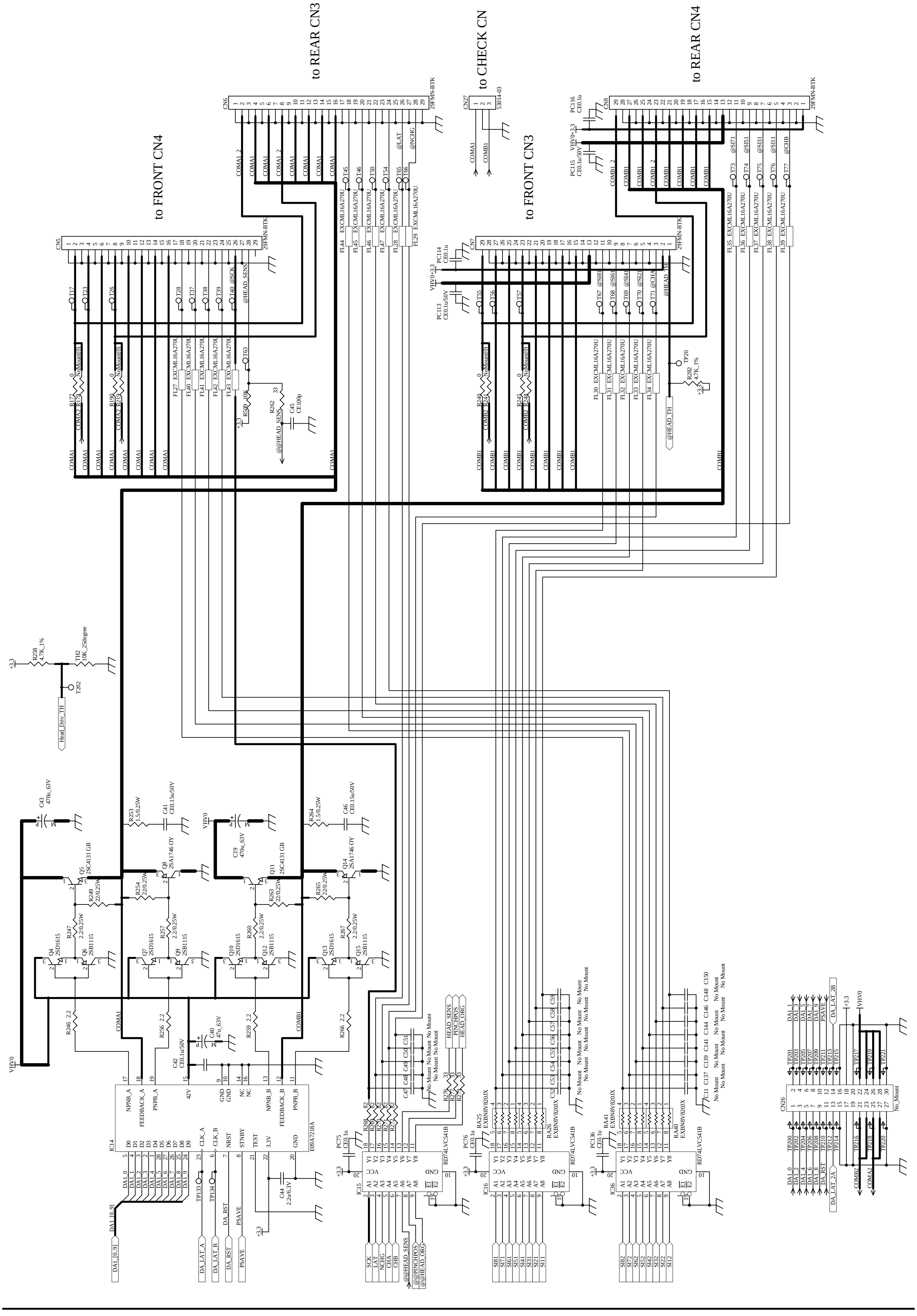
MAIN BOARD_Circuit Diagram 1/7


IC1 R5S72631P200FP
IC9 MT48LC16M16A2P-7E
IC10 MX29LV160DBTI-70G
IC12 NoMount(HA13721RP)
IC2 BN5VD029A
CN1 BRA42-1T1(32)
SW1 KHS22E
Y1 SG-710ECK-48.0000M-B
Y2 16.6666MHz

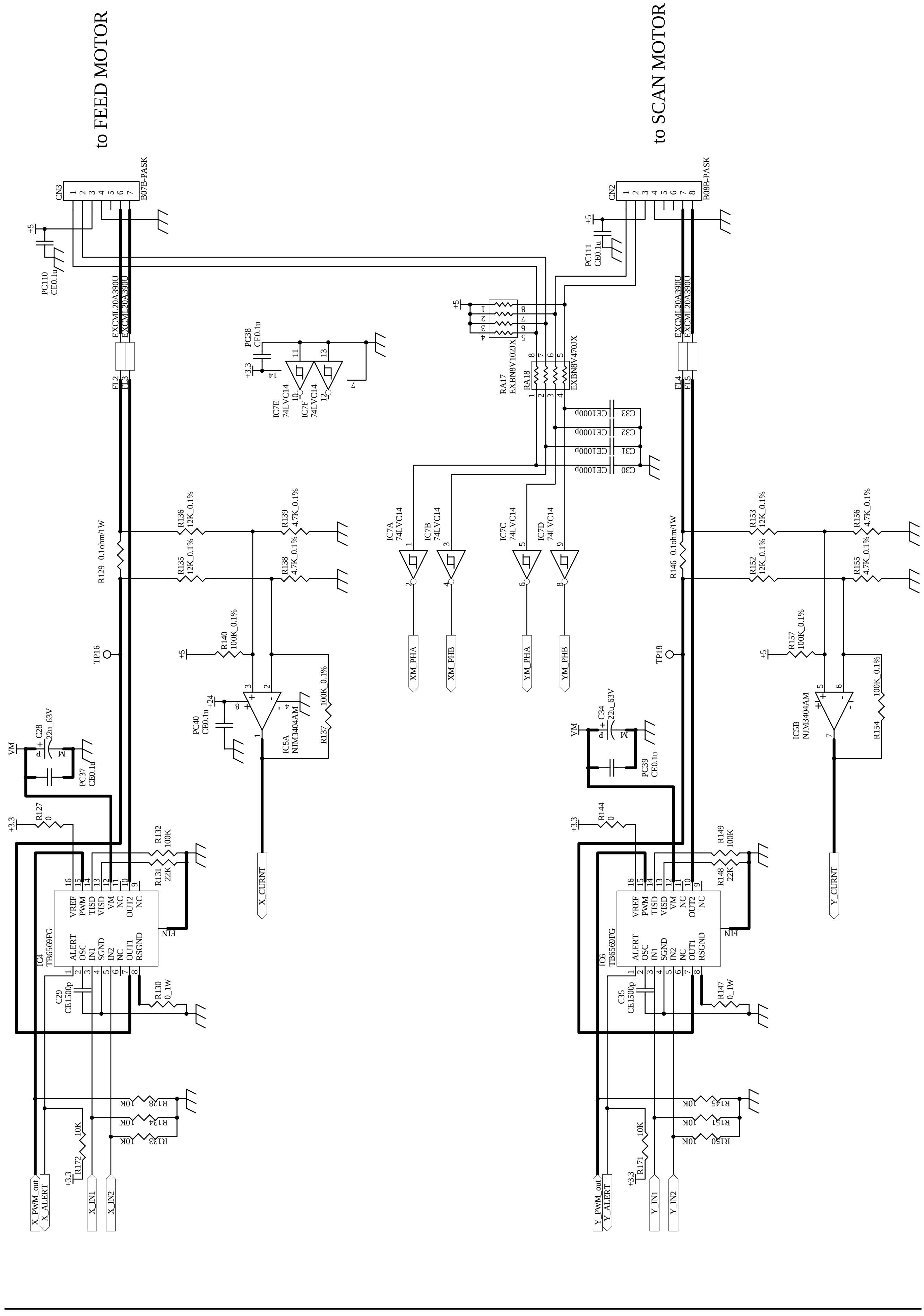
MAIN BOARD_Circuit Diagram 2/7


IC11
XC3S400A-4FTG256C
RA[0..25]
DD[0..15]
DA1_[0..9]
/Head_INT
/Sleep_INT
/Reserve_INT
CROP_ON
CROP_select
/CS2
/CS1
/RD
/WE0
/HEADCS
/WE1
/WR
/CS4
XIL_DONE
/XIL_PROG_B
TOOL_CLK_in
/FPGA_RESET
Y_ALERT
X_ALERT
Y_IN2
X_PWM_in
Y_PWM_in
X_PWM_out
X_IN2
Y_PWM_out
Y_IN1
TOOL_HOLD
X_IN1
TOOL_EN
PINCH_UD_CCNT
PUMP2_CCNT
PUMP1_CCNT
WIPE_EN
WIPE_CCNT
CLK66M
PINCH_UD_EN
PINCH_UD_RST
TOOL_RST
PUMP1_EN
PUMP1_RST
PUMP2_RST
WIPE_DIR
PUMP2_EN
PINCH_UD_DIR
WIPE_RST
TOOL_DIR
TOOL_CLK
PUMP2_CLK
PINCH_UD_CLK
PUMP2_DIR
PUMP1_CLK
PUMP1_DIR
CHOKE_SENS
WIPE_CLK
Ink_Exist_7
Ink_Exist_5
Ink_Empty_5
Ink_Exist_4
Ink_Exist_6
Ink_Empty_4
Ink_Empty_6
XIL_DIN
XIL_CLK
DA_RST
CHB
LAT
CHA
XIL_INIT
NCHG
SCK
PSAVE
HEAD_DACK
HEAD_DREQ
Ink_Exist_2
Ink_Exist_3
Ink_Empty_2
Ink_Empty_3
Ink_Empty_1
Ink_Exist_1
Ink_Empty_0
Ink_Exist_0
DA_LAT_2A
DA_LAT_2B
DA_LAT_A
DA_LAT_B
ENC_PHA
ENC_PHB
BED_FAN_ON
EXT_O0
EXT_O1
EXT_I0
EXT_I1
Buzzer
SETUP_LED
POWER_LED_G
POWER_LED_R
R_PAPER
F_PAPER
PINCH_UD_SENS
F_COVER
M_COVER
CAP_UNIT_SENS
P_SIDE_SENS
PINCHPOS
HEAD_ORG
WASTE_UNIT_SENS
CAP/WIPE_SENS
SETUP_SW
RESERVE_SW
POWER_SW
SHEET_CUT_SW
HEAD_SENS
RA19 EXBN8V560JX
RA20 EXBN8V560JX
RA21 EXBV8N560JX
RA22 EXBV8N560JX
RA23 EXBV8N560JX
RA24 EXBV8N560JX
C136 CE1000p
R364 33
+1.2
+3.3

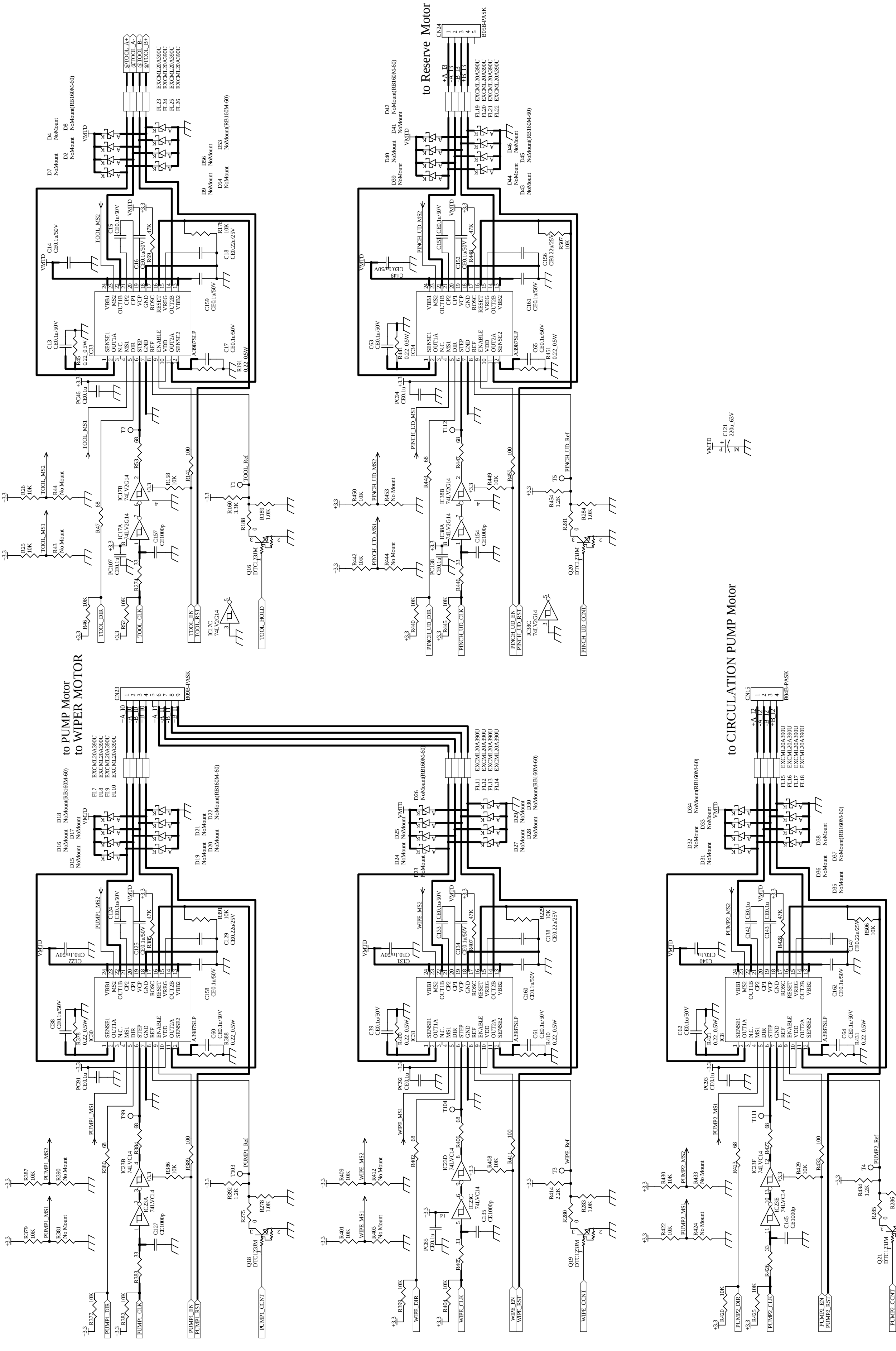
MAIN BOARD_Circuit Diagram 3/7


to REAR CN3
to CHECK CN
to REAR CN4
to FRONT CN4
to FRONT CN3
CN6
CN27
CN8
CN5
CN7
29FMN-BTK
53014-03
COMA1
COMA1_2
COMB1
COMB1_2
@LAT
@NCHG
@SCK
@HEAD_SENS
@HEAD_TH
@CHA
@CHB
Head_Driv_TH
VHV0
+3.3
IC14
E09A7218A
IC15
IC16
IC36
RD74LVC541B
RA25
RA26
RA40
RA41
EXBN8V820JX
CN26
DA1_[0..9]
DA_LAT_A
DA_LAT_B
DA_RST
PSAVE
SCK
LAT
NCHG
CHA
CHB
@@HEAD_SENS
@@PINCHPOS
@@HEAD_ORG
Q5 2SC4131 GB
Q8 2SA1746 OY
Q11 2SC4131 GB
Q14 2SA1746 OY
Q4 2SD1615
Q6 2SB1115
Q7 2SD1615
Q9 2SB1115
Q10 2SD1615
Q12 2SB1115
Q13 2SD1615
Q15 2SB1115
C43 470u_63V
C19 470u_63V
C40 47u_63V
TH2 10K_25degree
R258 4.7K_1%
TP20
No Mount

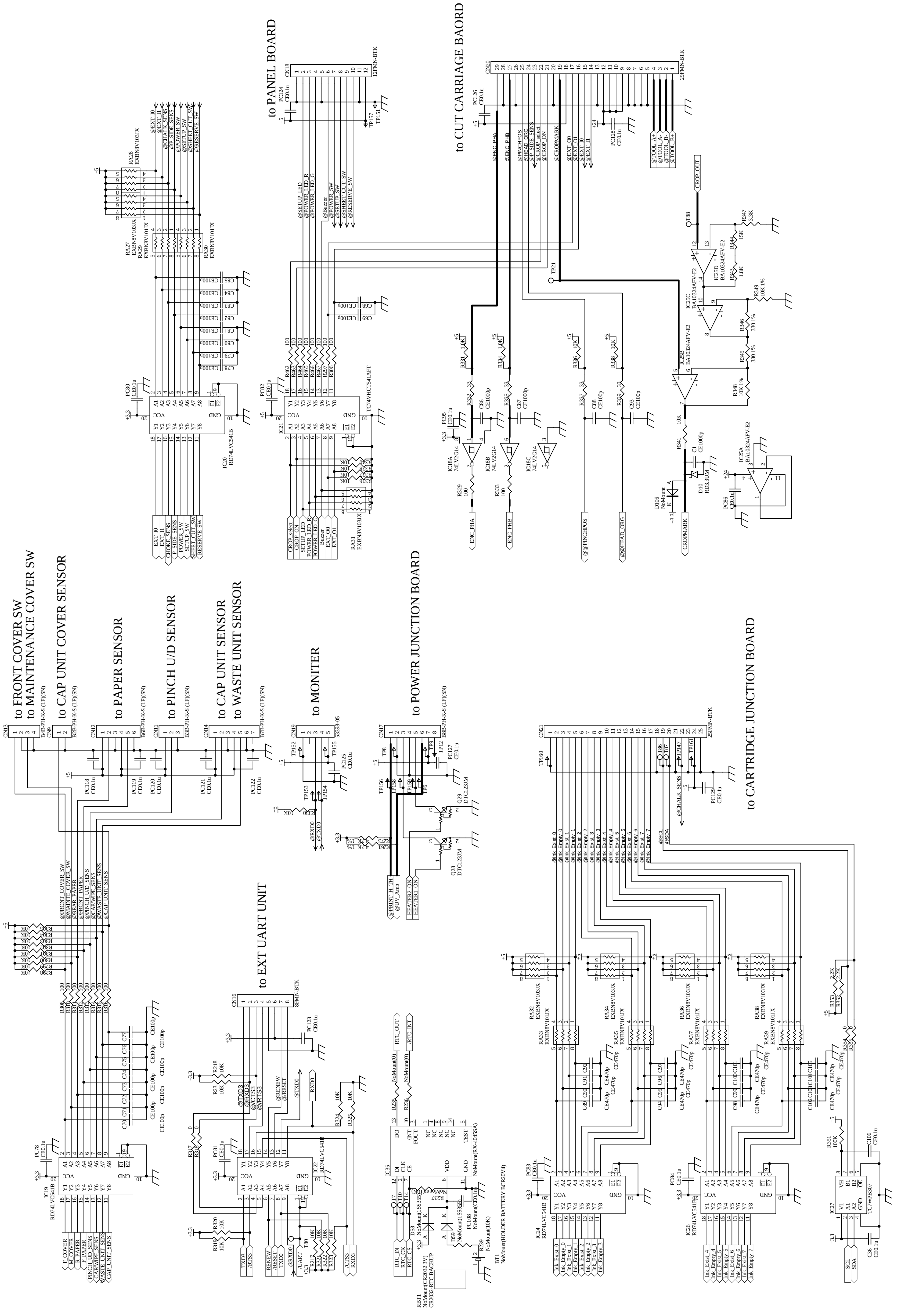
MAIN BOARD_Circuit Diagram 4/7


to FEED MOTOR
to SCAN MOTOR
CN3
B07B-PASK
CN2
B08B-PASK
+5
PC110
CE0.1u
PC111
CE0.1u
EXCML20A390U
FL2
FL3
FL4
FL5
PC38
CE0.1u
+3.3
IC7E
74LVC14
IC7F
74LVC14
RA17
EXBN8V102JX
RA18
EXBN8V470JX
C30
C31
C32
C33
CE1000p
R129 0.1ohm/1W
R135 12K_0.1%
R136 12K_0.1%
R138 4.7K_0.1%
R139 4.7K_0.1%
R140 100K_0.1%
R137 100K_0.1%
IC5A
NJM3404AM
PC40
CE0.1u
+24
TP16
IC7A
74LVC14
IC7B
74LVC14
IC7C
74LVC14
IC7D
74LVC14
XM_PHA
XM_PHB
YM_PHA
YM_PHB
R146 0.1ohm/1W
R152 12K_0.1%
R153 12K_0.1%
R155 4.7K_0.1%
R156 4.7K_0.1%
R157 100K_0.1%
R154 100K_0.1%
IC5B
NJM3404AM
TP18
VM
C28
22u_63V
PC37
CE0.1u
C34
22u_63V
PC39
CE0.1u
R127
0
R144
0
R131
22K
R132
100K
R148
22K
R149
100K
IC4
TB6569FG
IC6
TB6569FG
VREF
PWM
TISD
VISD
VM
NC
OUT2
NC
ALERT
OSC
IN1
SGND
IN2
NC
OUT1
RSGND
FIN
C29
CE1500p
C35
CE1500p
R130
0_1W
R147
0_1W
X_CURNT
Y_CURNT
R128
R134
R133
10K
R172
10K
R145
R151
R150
R171
X_PWM_out
X_ALERT
X_IN1
X_IN2
Y_PWM_out
Y_ALERT
Y_IN1
Y_IN2

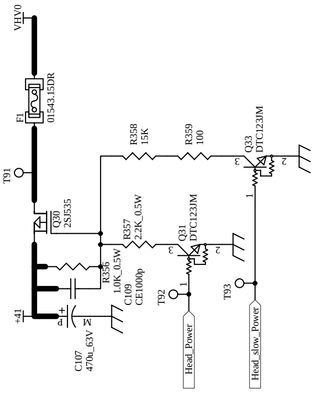
MAIN BOARD_Circuit Diagram 5/7

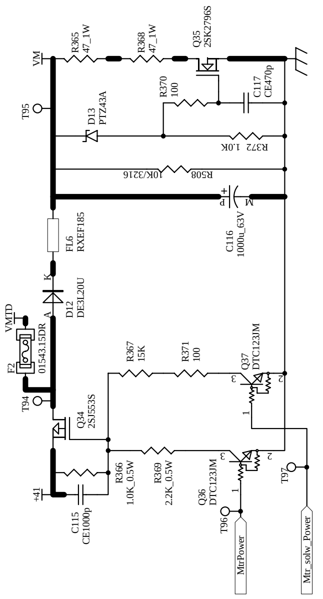

to Reserve Motor
CN24
B05B-PASK
to PUMP Motor
to WIPER MOTOR
CN23
B09B-PASK
to CIRCULATION PUMP Motor
CN15
B04B-PASK
A3987SLP
TOOL_MS1
TOOL_MS2
TOOL_DIR
TOOL_CLK
TOOL_EN
TOOL_RST
TOOL_HOLD
TOOL_Ref
PINCH_UD_MS1
PINCH_UD_MS2
PINCH_UD_DIR
PINCH_UD_CLK
PINCH_UD_EN
PINCH_UD_RST
PINCH_UD_CCNT
PINCH_UD_Ref
PUMP1_MS1
PUMP1_MS2
PUMP1_DIR
PUMP1_CLK
PUMP1_EN
PUMP1_RST
PUMP1_CCNT
PUMP1_Ref
WIPE_MS1
WIPE_MS2
WIPE_DIR
WIPE_CLK
WIPE_EN
WIPE_RST
WIPE_CCNT
WIPE_Ref
PUMP2_MS1
PUMP2_MS2
PUMP2_DIR
PUMP2_CLK
PUMP2_EN
PUMP2_RST
PUMP2_CCNT
PUMP2_Ref
VMTD
C121
220u_63V
@TOOL_A+
@TOOL_A-
@TOOL_B-
@TOOL_B+
EXCML20A390U
NoMount(RB160M-60)
74LV2G14
74LVC14
DTC123JM

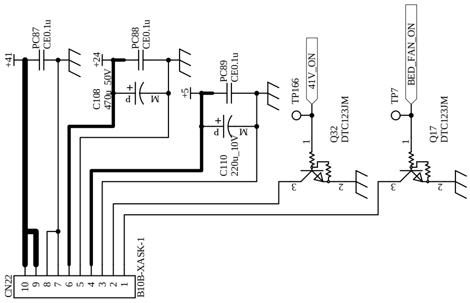
MAIN BOARD_Circuit Diagram 6/7

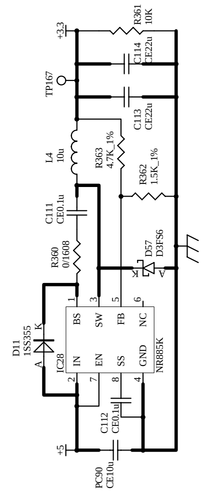

to PANEL BOARD
to CUT CARRIAGE BAORD
to FRONT COVER SW
to MAINTENANCE COVER SW
to CAP UNIT COVER SENSOR
to PAPER SENSOR
to PINCH U/D SENSOR
to CAP UNIT SENSOR
to WASTE UNIT SENSOR
to MONITER
to POWER JUNCTION BOARD
to CARTRIDGE JUNCTION BOARD
to EXT UART UNIT
CN18
CN20
CN13
CN9
CN12
CN11
CN14
CN19
CN17
CN21
CN16
IC20
IC21
IC19
IC22
IC35
IC24
IC26
IC27
IC18A
IC18B
IC18C
IC25A
IC25B
IC25C
IC25D
RD74LVC541B
TC74VHCT541AFT
74LV2G14
BA10324AFV-E2
TC7WPB307
BT1
RBT1
CROP_OUT
CROPMARK
ENC_PHA
ENC_PHB

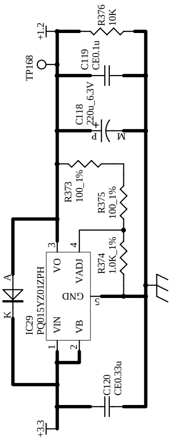
MAIN BOARD_Circuit Diagram 7/7

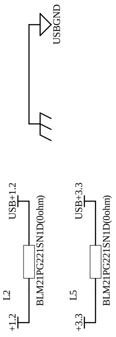

VHV0
F1
01543.15DR
T91
Q30
2SJ535
R358
15K
R359
100
Q33
DTC123JM
R357
2.2K_0.5W
Q31
DTC123JM
R356
1.0K_0.5W
C109
CE1000p
+41
C107
470u_63V
T92
T93
Head_Power
Head_slow_Power


VM
R365
47_1W
R368
47_1W
Q35
2SK2796S
T95
D13
PTZ43A
R370
100
C117
CE470p
R372 1.0K
R508 10K/3216
C116
1000u_63V
FL6
RXEF185
D12
DE3L20U
VMTD
F2
01543.15DR
T94
Q34
2SJ553S
R367
15K
R371
100
Q37
DTC123JM
+41
C115
CE1000p
R366
1.0K_0.5W
R369
2.2K_0.5W
Q36
DTC123JM
T96
T97
MtrPower
Mtr_solw_Power


+41
PC87
CE0.1u
+24
PC88
CE0.1u
C108
470u_50V
+5
PC89
CE0.1u
C110
220u_10V
TP166
41V_ON
Q32
DTC123JM
TP7
BED_FAN_ON
Q17
DTC123JM
CN22
B10B-XASK-1

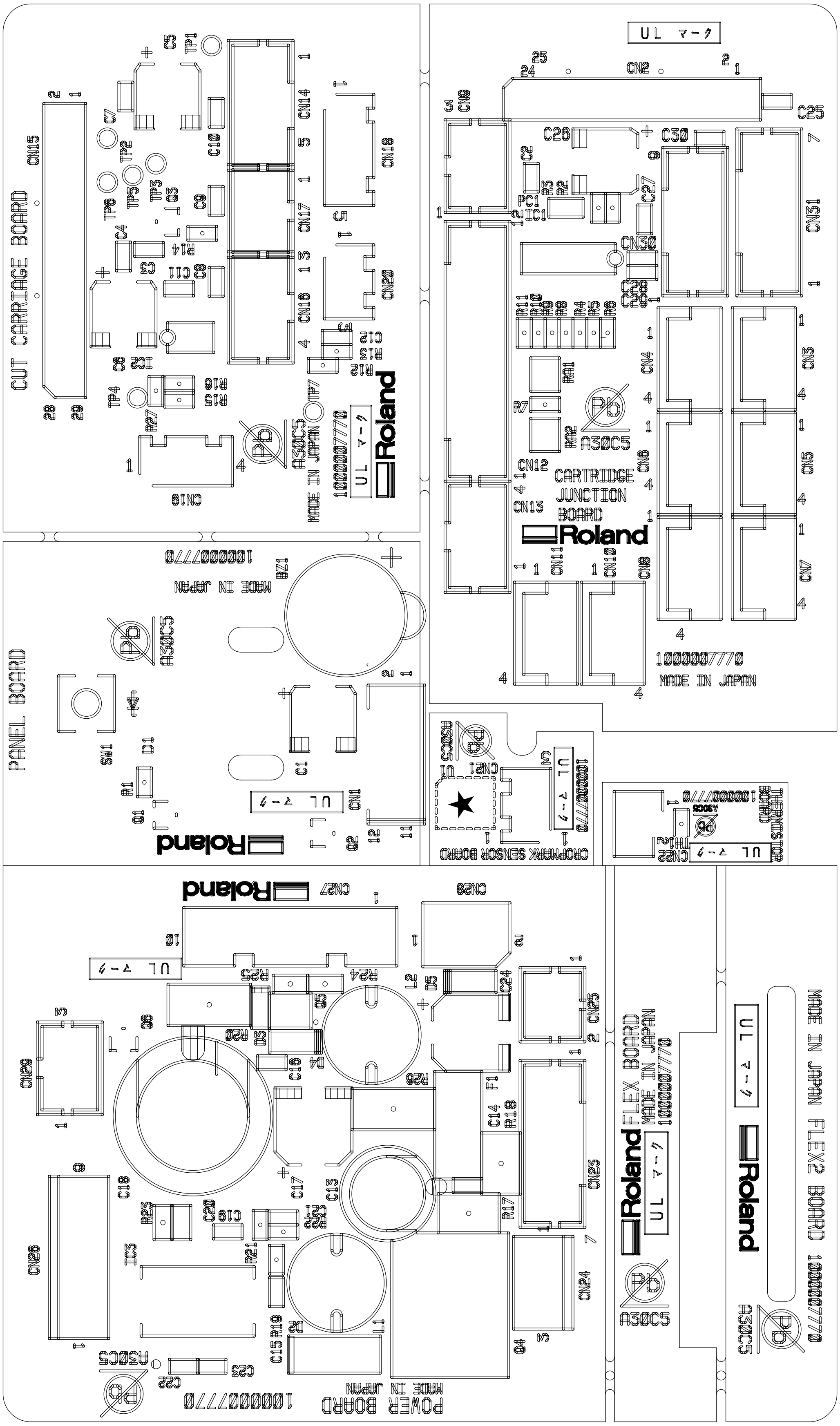

+3.3
R361
10K
C114
CE22u
TP167
C113
CE22u
L4
10u
R363
4.7K_1%
R362
1.5K_1%
C111
CE0.1u
R360
0/1608
D57
D3FS6
D11
1SS355
IC28
NR885K
BS
SW
FB
NC
IN
EN
SS
GND
C112
CE0.1u
+5
PC90
CE10u


+1.2
R376
10K
TP168
C119
CE0.1u
C118
220u_6.3V
R373
100_1%
R375
100_1%
R374
1.0K_1%
D14
1SS355
IC29
PQ015YZ01ZPH
VO
VADJ
GND
VIN
VB
C120
CE0.33u
+3.3


USBGND
USB+1.2
L2
BLM21PG221SN1D(0ohm)
+1.2
USB+3.3
L5
BLM21PG221SN1D(0ohm)
+3.3

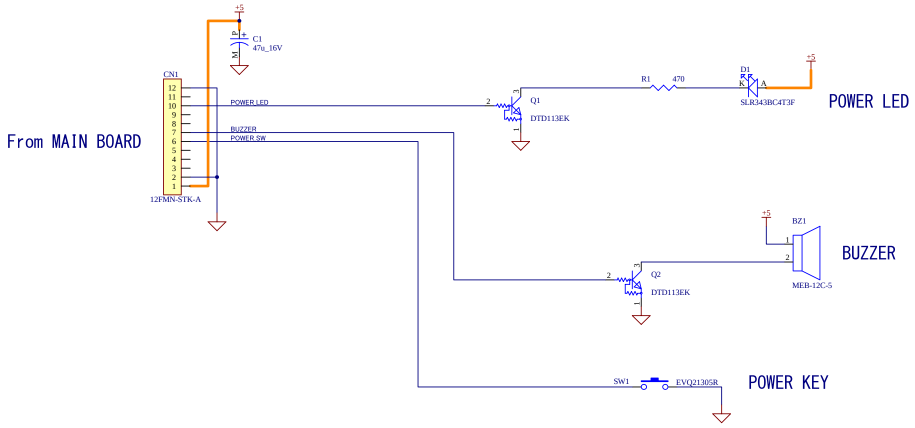
2-3 SUB BOARD

SUB BOARD_Arrangement Diagram (Component Side)


CUT CARRIAGE BOARD
CN14
CN15
CN16
CN17
CN18
CN19
CN20
TP1
TP2
TP3
TP4
TP5
TP6
TP7
IC2
C5
C7
C8
C9
C10
C11
C12
R14
R15
R16
R17
Q3
UL マーク
MADE IN JAPAN
1000007770
A30C5
Roland
CARTRIDGE JUNCTION BOARD
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN30
CN31
C2
C25
C26
C27
C30
PC1
IC1
RA1
RA2
R7
PANEL BOARD
BZ1
SW1
D1
R1
C1
Q1
Q2
CN1
CROPMARK SENSOR BOARD
CN21
THERMISTOR BOARD
CN22
TH1
POWER BOARD
CN23
CN24
CN25
CN26
CN27
CN28
CN29
C13
C14
C15
C16
C17
C18
C19
C20
C22
C23
D3
D4
D5
F1
IC3
L1
L2
R18
R19
R20
R21
R23
R24
R25
R26
FLEX BOARD
FLEX2 BOARD

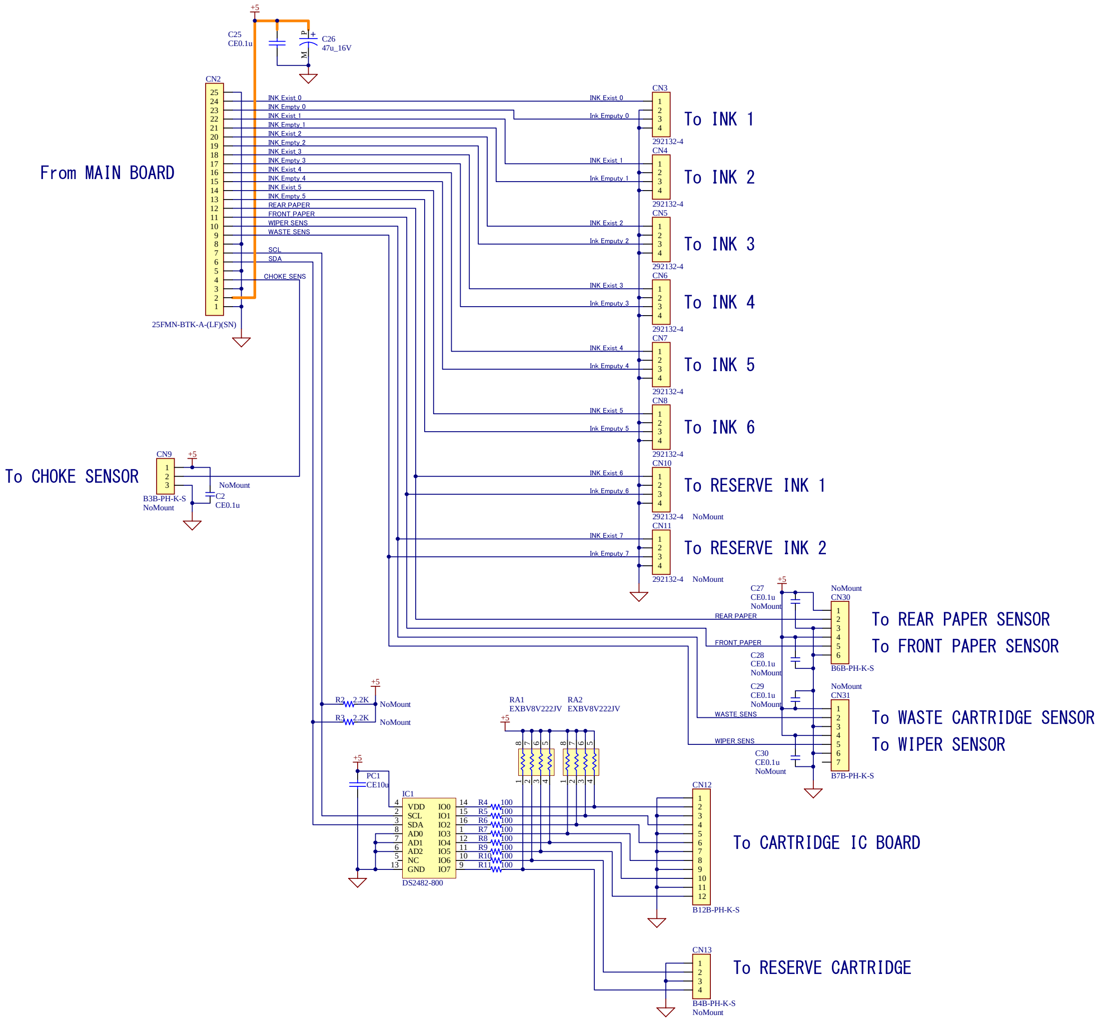
SUB BOARD_Circuit Diagram 1/3

PANEL BOARD



From MAIN BOARD
CN1
12FMN-STK-A
+5
C1
47u_16V
POWER LED
BUZZER
POWER SW
Q1
DTD113EK
R1
470
D1
SLR343BC4T3F
POWER LED
BZ1
MEB-12C-5
BUZZER
Q2
DTD113EK
SW1
EVQ21305R
POWER KEY

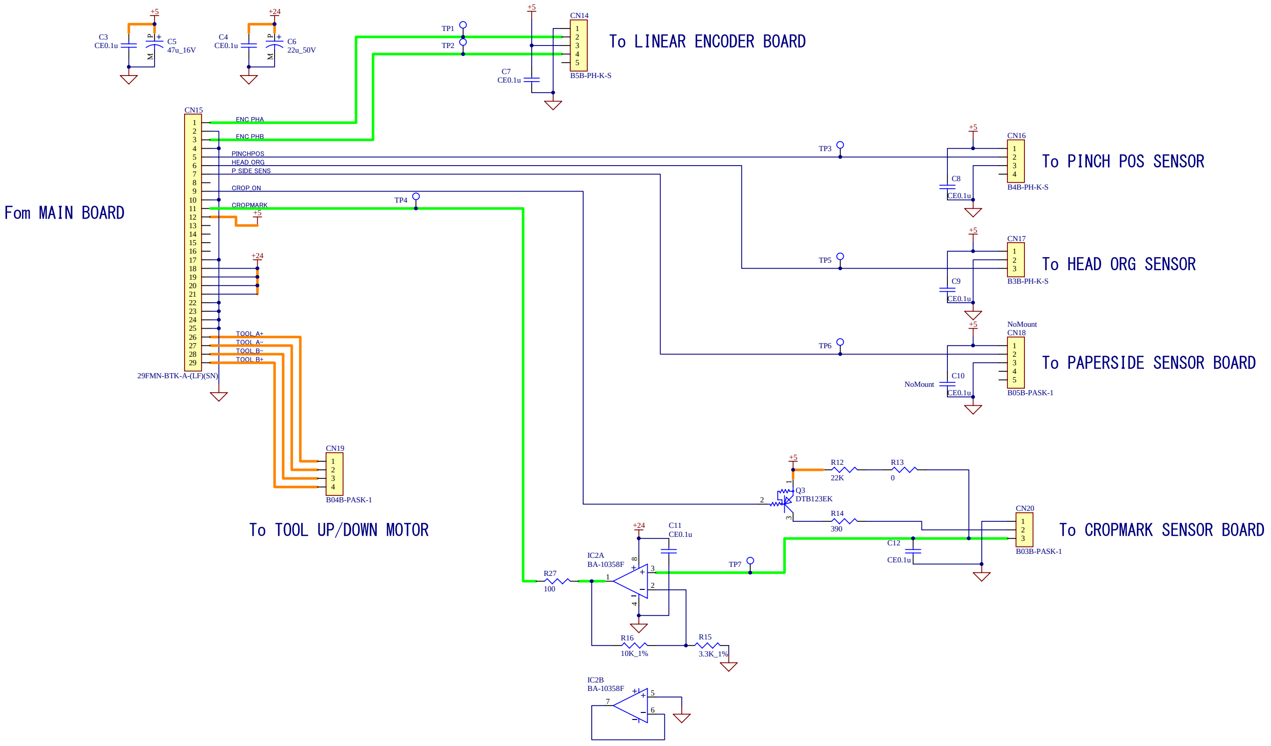
CARTRIDGE JUNCTION BOARD



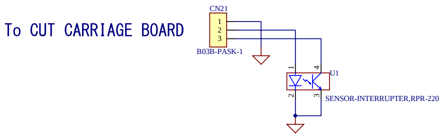
From MAIN BOARD
CN2
25FMN-BTK-A-(LF)(SN)
+5
C25
CE0.1u
C26
47u_16V
INK Exist 0
INK Empty 0
INK Exist 1
INK Empty 1
INK Exist 2
INK Empty 2
INK Exist 3
INK Empty 3
INK Exist 4
INK Empty 4
INK Exist 5
INK Empty 5
REAR PAPER
FRONT PAPER
WIPER SENS
WASTE SENS
SCL
SDA
CHOKE SENS
CN3
To INK 1
CN4
To INK 2
CN5
To INK 3
CN6
To INK 4
CN7
To INK 5
CN8
To INK 6
CN10
To RESERVE INK 1
CN11
To RESERVE INK 2
292132-4
NoMount
To CHOKE SENSOR
CN9
B3B-PH-K-S
C2
CE0.1u
CN30
B6B-PH-K-S
To REAR PAPER SENSOR
To FRONT PAPER SENSOR
C27
C28
C29
C30
CE0.1u
CN31
B7B-PH-K-S
To WASTE CARTRIDGE SENSOR
To WIPER SENSOR
R2
R3
2.2K
PC1
CE10u
IC1
DS2482-800
VDD
SCL
SDA
AD0
AD1
AD2
NC
GND
IO0
IO1
IO2
IO3
IO4
IO5
IO6
IO7
R4
R5
R6
R7
R8
R9
R10
R11
100
RA1
EXBV8V222JV
RA2
EXBV8V222JV
CN12
B12B-PH-K-S
To CARTRIDGE IC BOARD
CN13
B4B-PH-K-S
To RESERVE CARTRIDGE

SUB BOARD_Circuit Diagram 2/3

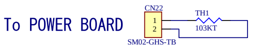
CUT CARRIAGE BOARD


C3
CE0.1u
+5
C5
47u_16V
C4
CE0.1u
+24
C6
22u_50V
TP1
TP2
+5
CN14
C7
CE0.1u
B5B-PH-K-S
To LINEAR ENCODER BOARD
CN15
ENC PHA
ENC PHB
PINCHPOS
HEAD ORG
P SIDE SENS
CROP ON
CROPMARK
TP4
+5
+24
TOOL A+
TOOL A-
TOOL B-
TOOL B+
29FMN-BTK-A-(LF)(SN)
Fom MAIN BOARD
TP3
+5
CN16
C8
CE0.1u
B4B-PH-K-S
To PINCH POS SENSOR
TP5
+5
CN17
C9
CE0.1u
B3B-PH-K-S
To HEAD ORG SENSOR
TP6
+5
NoMount
CN18
NoMount
C10
CE0.1u
B05B-PASK-1
To PAPERSIDE SENSOR BOARD
CN19
B04B-PASK-1
To TOOL UP/DOWN MOTOR
+5
R12
22K
R13
0
Q3
DTB123EK
R14
390
CN20
B03B-PASK-1
To CROPMARK SENSOR BOARD
C12
CE0.1u
+24
C11
CE0.1u
IC2A
BA-10358F
TP7
R27
100
R16
10K_1%
R15
3.3K_1%
IC2B
BA-10358F

CROPMARK SENSOR BOARD

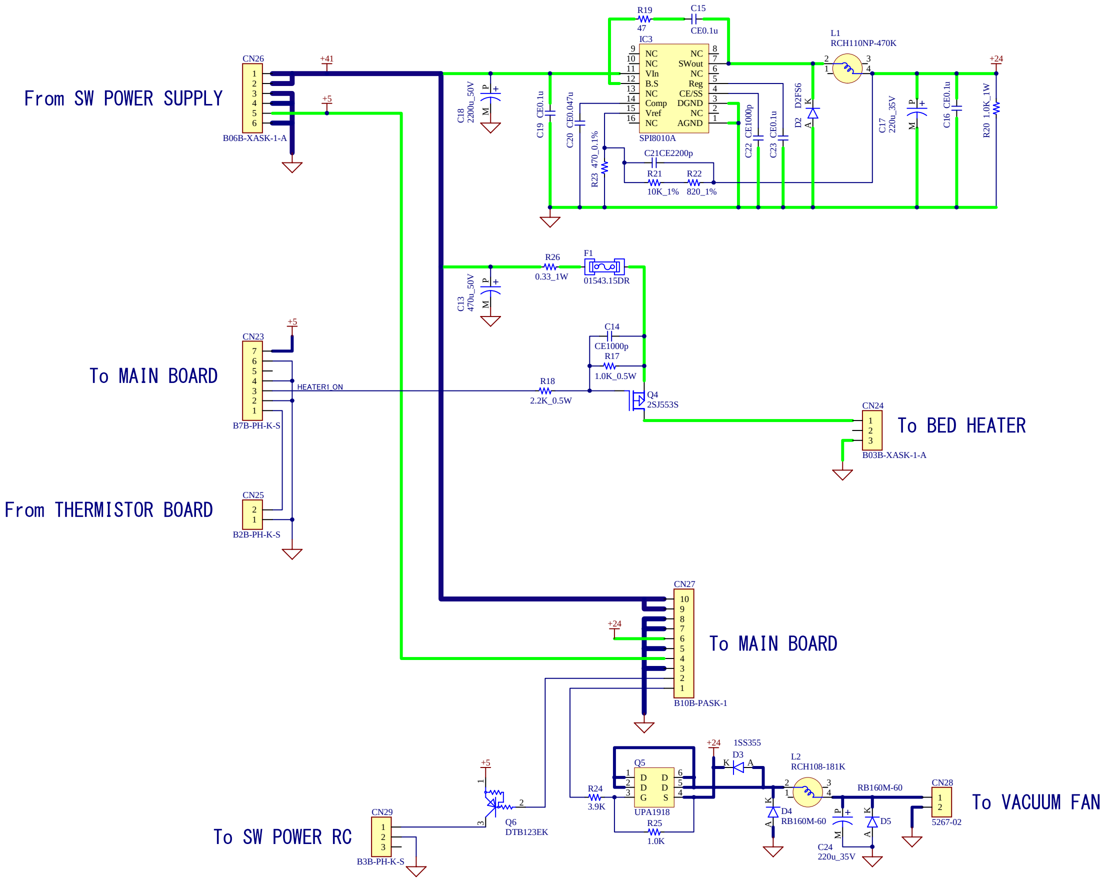

To CUT CARRIAGE BOARD
CN21
B03B-PASK-1
U1
SENSOR-INTERRUPTER,RPR-220

THERMISTOR BOARD


To POWER BOARD
CN22
SM02-GHS-TB
TH1
103KT

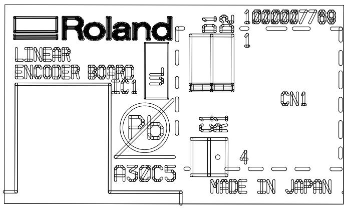
SUB BOARD_Circuit Diagram 3/3

POWER BOARD

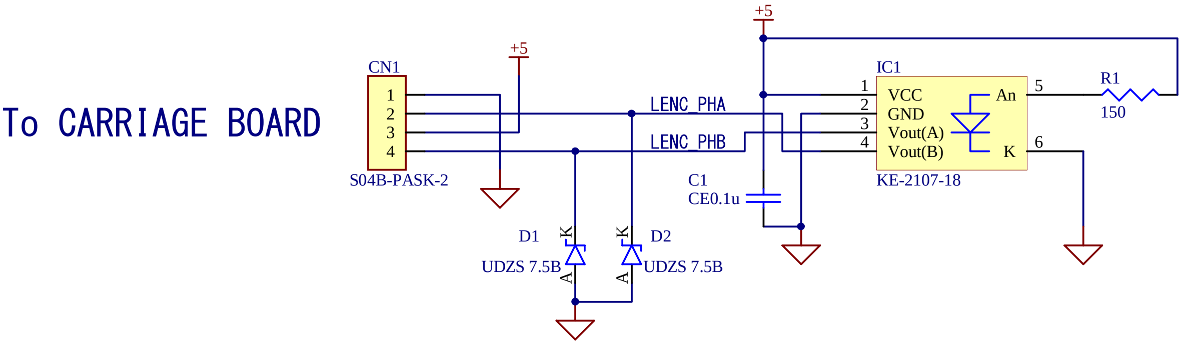

From SW POWER SUPPLY
CN26
B06B-XASK-1-A
+41
+5
C18
2200u_50V
C19 CE0.1u
C20 CE0.047u
R23 470_0.1%
R19
47
C15
CE0.1u
IC3
NC
VIn
B.S
Comp
Vref
SWout
Reg
CE/SS
DGND
AGND
SPI8010A
C21CE2200p
R21
10K_1%
R22
820_1%
C22 CE1000p
C23 CE0.1u
D2 D2FS6
L1
RCH110NP-470K
C17
220u_35V
C16 CE0.1u
R20 1.0K_1W
+24
R26
0.33_1W
F1
01543.15DR
C13
470u_50V
C14
CE1000p
R17
1.0K_0.5W
R18
2.2K_0.5W
Q4
2SJ553S
To MAIN BOARD
CN23
B7B-PH-K-S
HEATER1_ON
To BED HEATER
CN24
B03B-XASK-1-A
From THERMISTOR BOARD
CN25
B2B-PH-K-S
CN27
To MAIN BOARD
B10B-PASK-1
+24
Q5
UPA1918
R24
3.9K
R25
1.0K
1SS355
D3
L2
RCH108-181K
D4
RB160M-60
D5
RB160M-60
C24
220u_35V
CN28
5267-02
To VACUUM FAN
+5
Q6
DTB123EK
To SW POWER RC
CN29
B3B-PH-K-S

2-4 LINEAR ENCODER BOARD

LINEAR ENCODER BOARD_Arrangement Diagram_Component side


Roland
1000007769
LINEAR
ENCODER BOARD
IC1
D1
D2
1
CN1
C1
4
A30C5
MADE IN JAPAN

LINEAR ENCODER BOARD_Circuit Diagram


To CARRIAGE BOARD
CN1
1
2
3
4
S04B-PASK-2
+5
LENC_PHA
LENC_PHB
D1
UDZS 7.5B
D2
UDZS 7.5B
K
A
K
A
+5
C1
CE0.1u
IC1
1
2
3
4
VCC
GND
Vout(A)
Vout(B)
An
K
5
6
KE-2107-18
R1
150

2-5 MAINTENANCE PARTS LIST_Electrical Parts

MAIN BOARD

Revised 10

Parts No	Parts Name	Description	Function
1000000659	FUSE,01543.15DR	F1	DC Fuse for Head
		F2	DC Fuse for STEPPER MOTOR Driver

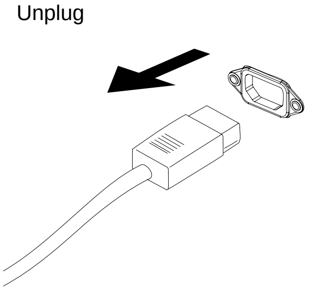
POWER BOARD

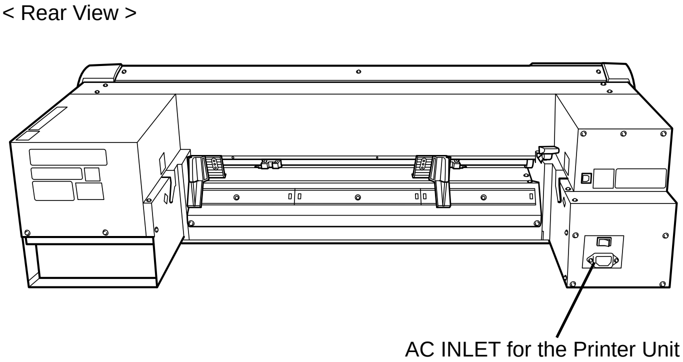
Parts No	Parts Name	Description	Function
1000000659	FUSE,01543.15DR	F1	DC Fuse for HEATER

To Ensure safe Work

⚠WARNING

Turn off the Sub Power SW, Main Power SW, and unplug the power cable of the Printer and deodorization equipment before performing parts replacement.
Performing the parts replacement while the power is on may result in injury by unintended operation of the machine.





Static electricity can harm some electronic devices. To prevent static damage, discharge static electricity from your body before you touch any of electronic devices. You can do so by touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive device from its shipping carton, do not remove the device from the antistatic packing material until you are ready to install the device to the machine. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive device, first place it in an antistatic container or packaging.
- Handle all sensitive devices in a static-safe area. If possible, use antistatic floor pads and workbench pads.

The necessary adjustments after the replacement of each part, and the referential time for each work are described as follows. △19 △25

HEAD REPLACEMENT : 40 min.
1. THERMISTER CHECK
It can be checked in the SERVICE APPLICATION>STATUS>TEMPERATURE>HEAD.
2. TEST PRINT
3. HEAD ALIGNMENT
4. CROP-CUT ADJUSTMENT
5. PRINT / CUT POSITION ADJUSTMENT
Adj. Time : 20 min
Total Time : 60 min

DAMPER REPLACEMENT : 15 min.
Total Time : 15 min

CAPTOP REPLACEMENT : 10 min.
Total Time : 15 min

WIPER/FELT WIPER REPLACEMENT : 10 min.
Total Time : 10 min

TOOL MOTOR REPLACEMENT : 10 min.
1. TOOL PRESSURE ADJUSTMENT
2. CROP-CUT ADJUSTMENT
3. PRINT/CUT POSITION ADJUSTMENT
Adj. Time : 10 min
Total Time : 20 min.

CARRIAGE MOTOR REPLACEMENT : 10 min.
1. SERVO LOCK CHECK
It can be checked in the SERVICE APPLICATION>Motor>Servo Lock Check
2. AGING
It can be checked in the SERVICE APPLICATION>Motor>Aging>Scan
3. MOTOR HOURS CLEAR
It can be checked in the SERVICE APPLICATION>Motor>Clear Motor History>Scan>Clear
Adj. Time : 5 min
Total Time : 15 min

FEED MOTOR REPLACEMENT : 10 min.
1. SERVO LOCK CHECK
It can be checked in the SERVICE APPLICATION>Motor>Servo Lock Check
2. AGING
It can be checked in the SERVICE APPLICATION>Motor>Aging>Feed
3. MOTOR HOURS CLEAR
It can be checked in the SERVICE APPLICATION>Motor>Clear Motor History>Feed>Clear
Adj. Time : 5 min
Total Time : 15 min

WIPER SCRAPER REPLACEMENT : 10 min.
Total Time : 10 min

MAIN BOARD REPLACEMENT (In case that the parameters can be transferred by Peck.) : 10 min.
1. CHANGE DIP SW SETTING
    BN-20/BN-20D (1: OFF, 2: OFF)
    BN-20A (1: OFF, 2: ON)
    Note: Main power switch needs to be turned off.
2.SERIAL NUMBER SETTING
It can be checked in the SERVICE APPLICATION>System>Serial
3. FIRMWARE UPGRADE
4. SYSTEM PARAMETER DELETION
It can be checked in the SERVICE APPLICATION>Syetem>Parameter>Clear
5. SYSTEM PARAMETER INITIAL SETTING
It can be checked in the SERVICE APPLICATION>Syetem>Parameter>Format
6. PUT PARAMETER
It can be checked in the SERVICE APPLICATION>System>Parameter>Put
7. SENSOR CHECK
It can be checked in the SERVICE APPLICATION>Sub>Sensor Check>Start
Adj. Time : 10 min.
Total Time : 20 min.

MAIN BOARD REPLACEMENT (In case that the parameters cannot be transferred by Peck.) : 35 min.

1. CHANGE DIP SW SETTING
    BN-20/ BN-20D(1: OFF, 2: OFF)
    BN-20A (1: OFF, 2: ON)
        Note: Main power switch needs to be turned off.
2. SERIAL NUMBER SETTING
 It can be checked in the SERVICE APPLICATION>System>Serial
3. FIRMWARE UPGRADE
4. SYSTEM PARAMETER DELETION
 It can be checked in the SERVICE APPLICATION>Syetem>Parameter>Clear
5. SYSTEM PARAMETER INITIAL SETTING
 It can be checked in the SERVICE APPLICATION>Syetem>Parameter>Format
6. HEAD RANK SETTING
 It can be checked in the SERVICE APPLICATION>Print>Head Rank
7. INK TYPE SETTING
 It can be checked in the SERVICE APPLICATION>I/S>Ink Type
8. SENSOR CHECK
 It can be checked in the SERVICE APPLICATION>Sub>Sensor Check>Start
9. LINEAR ENCODER SETUP
10. HEAD ALIGNMENT
Only Bidirectional Adjustment is required.
11. TOOL PRESSURE ADJUSTMENT
12. CALIBRATION
13. CROP-CUT ADJUSTMENT
14. PRINT / CUT POSITION ADJUSTMENT

Adj. Time : 25 min.
Total Time : 35 min.

POWER BOARD REPLACEMENT : 10 min.

Total Time : 10 min.

CUT-CARRIAGE BOARD REPLACEMENT : 10 min.

Total Time : 10 min.

CROP MARK SENSOR BOARD REPLACEMENT : 15 min.

1. CROP-CUT ADJUSTMENT

Adj. Time : 5 min.
Total Time : 15 min.

PANEL BOARD REPLACEMENT : 10 min.

Total Time : 10 min.

ENCODER SCALE REPLACEMENT : 15 min.

1. LINEAR ENCODER SETUP

Adj. Time : 5 min.
Total Time : 15 min.

LINEAR ENCODER BOARD REPLACEMENT : 15 min.

1. LINEAR ENCODER SETUP

Adj. Time : 5 min.
Total Time : 15 min.

CARRIAGE BELT REPLACEMENT : 35 min.

1. TOOL PRESSURE ADJUSTMENT
2. CROP-CUT ADJUSTMENT
3. PRINT/CUT POSITION ADJUSTMENT
4. CUTTING QUALITY CHECK

Adj. Time : 20 min.
Total Time : 55 min.

INK TUBE REPLACEMENT : 25 min.

Total Time : 25 min.

INK TUBE REPLACEMENT(CIRCULATING PUMP LINE) : 30 min.

Revised 4

Total Time : 10 min.

RIBBON CABLE BETWEEN MAIN BOARD AND HEAD REPLACEMENT : 35 min.

Total Time : 35 min.

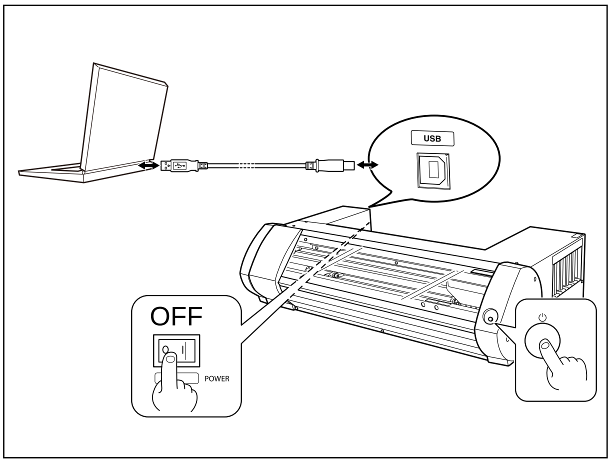
GUIDE FLANGE REPLACEMENT : 15 min.

Total Time: 15 min.

3-1 HEAD REPLACEMENT

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

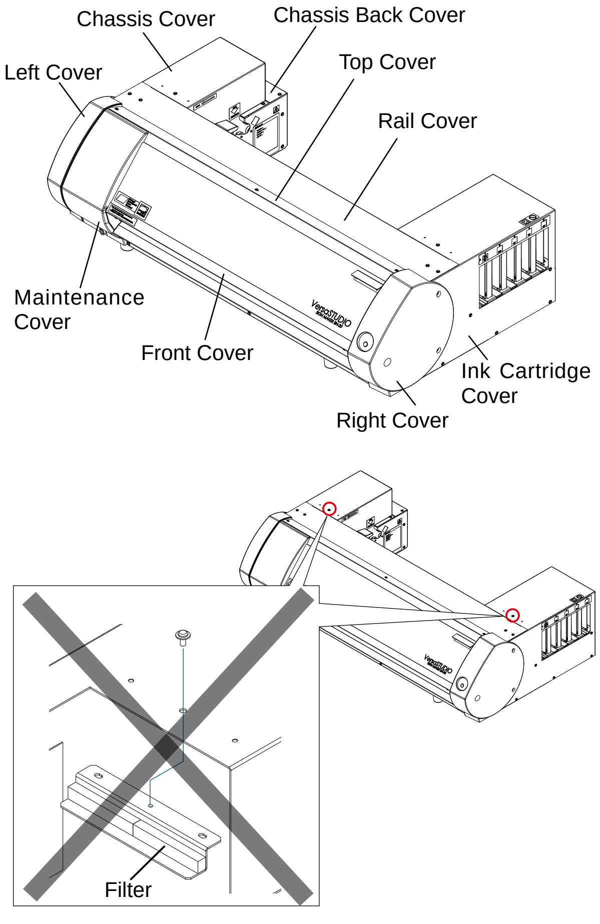
Be sure to turn off the main power when replacing the head. The Head or Main Board could break, otherwise. It is recommended to disconnect the power cord.


USB
OFF
POWER

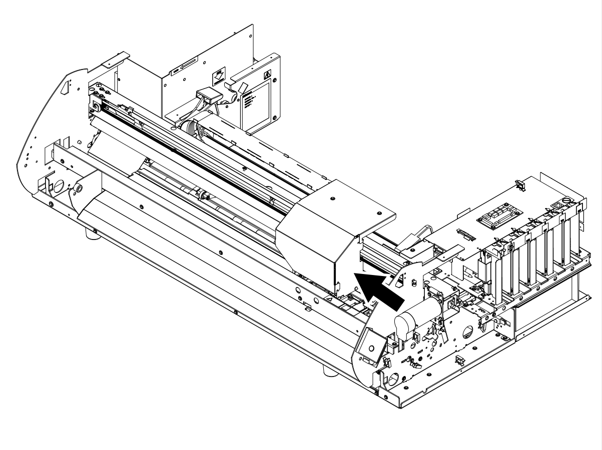
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

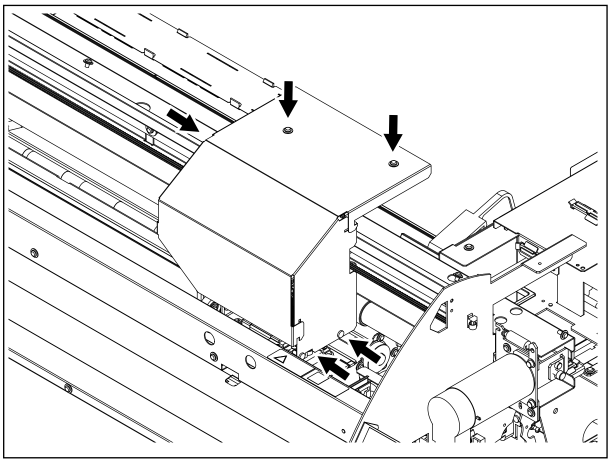
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

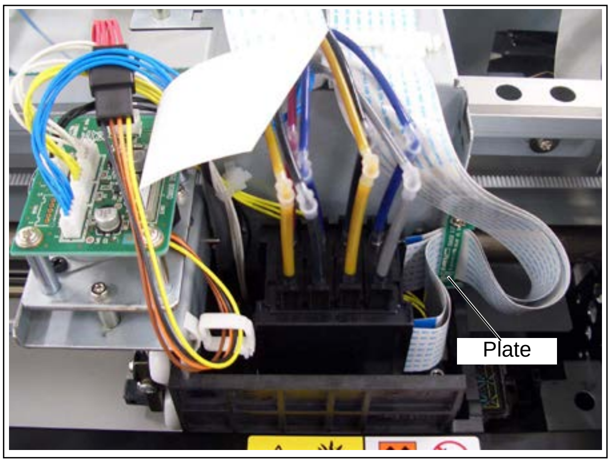
3 Move the Head Carriage on the Bed.



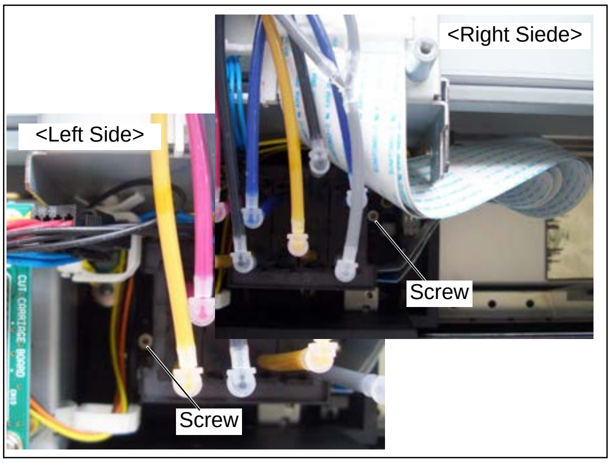
4 Remove the Head Carriage Cover.



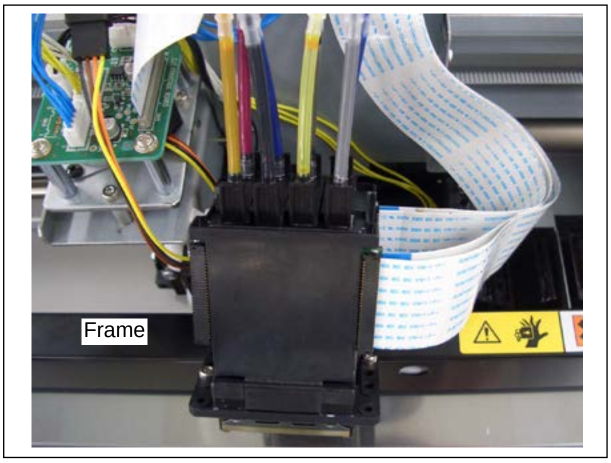
5 Remove the Plate which attaches the ribbon cables to the Head.



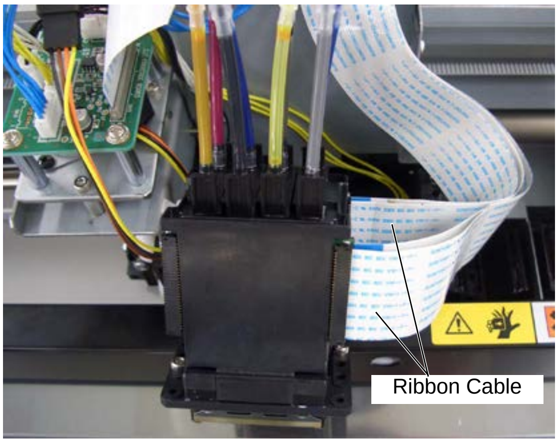
6 Unfold the ribbon cables and remove the screws attaching the Head.



7 Lift up the Head and put it to the front of the Frame.
To prevent the ink from leaking or spattering, put the uner the Head.

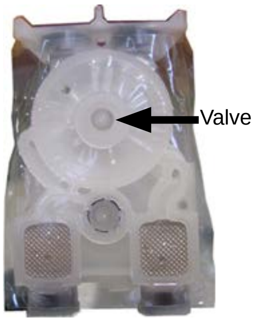


8 Disconnect the ribbon cables from the Head.
Put the disconnected Head Ribbon Cables underneath the Carriage Stay

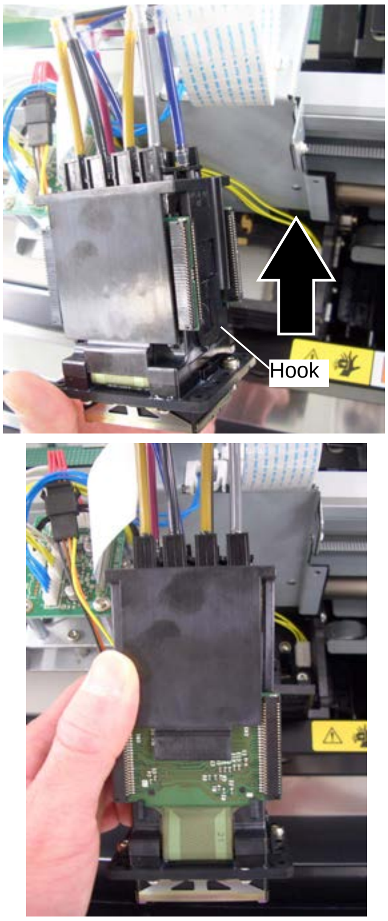


8 Pull up the Damper, the ink tubes and the Head Covers slowly with opening the Hook of the Head Cover.

Do not touch the valve of the Damper. When you touch the valve, the ink leaks from the Damper.

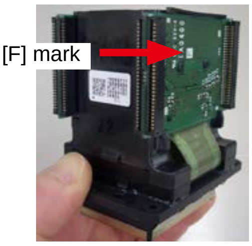


When the ink drops on the Head Board, the Head will be broken.

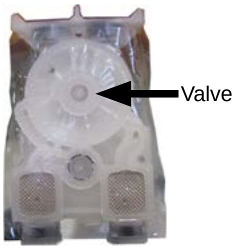


9 Attach the Damper, the ink tubes and the Head Cover set to the new Head.

Attach the Head with turning the [F] mark on the board to the front.

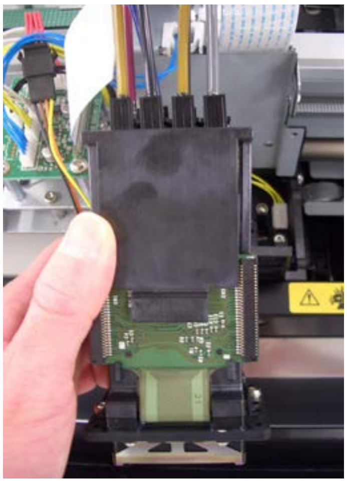


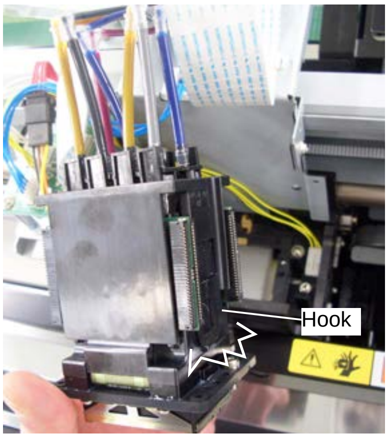
Do not touch the valve of the Damper. When you touch the valve, the ink leaks from the Damper.



Press the Head Cover to the Head until the hook of the Head Cover clicks into place.

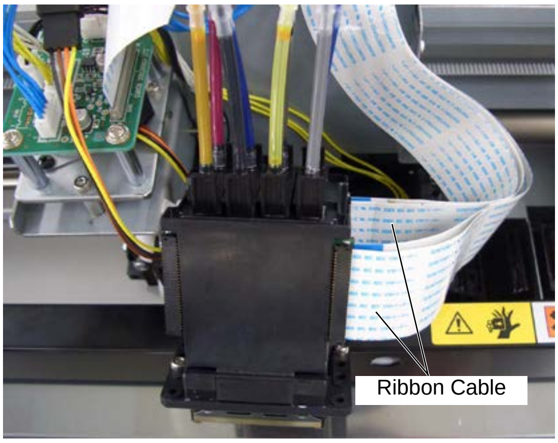
Be careful not to make the head surface touch with the Head Carriage Base.



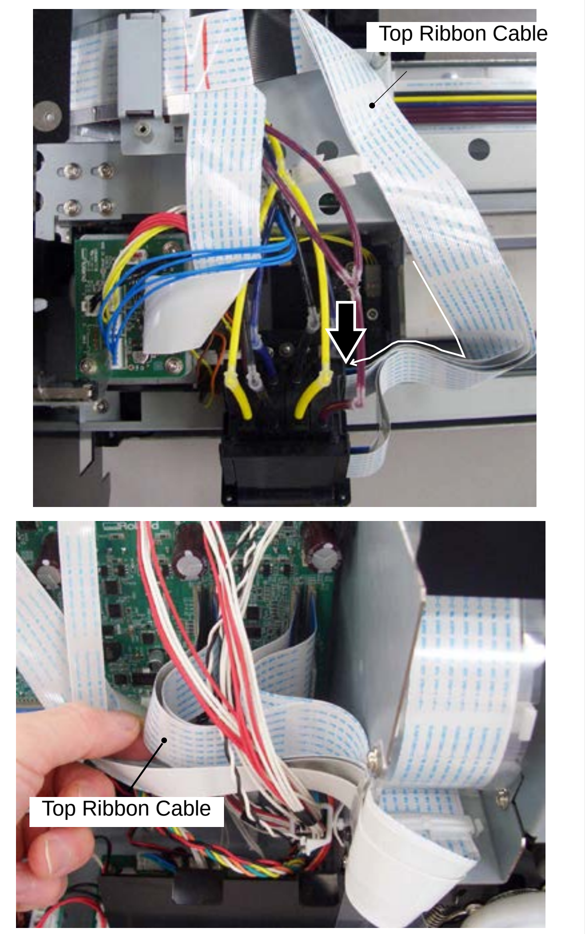


10 Connect the Head Ribbon Cables to the Head.

Do not connect the cables to the wrong connector or connect the cables halfway. The Head will be broken.

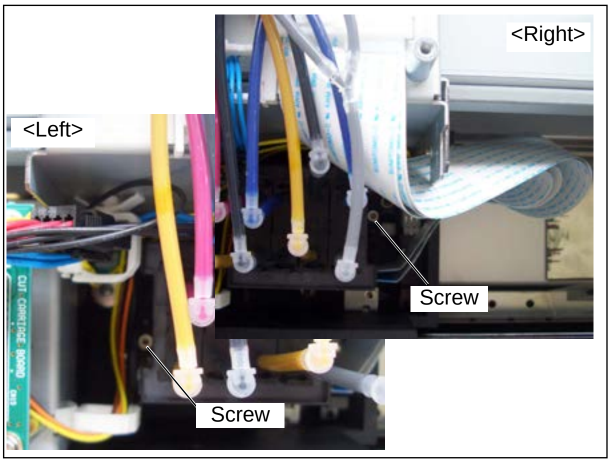


Turn the character side of the top ribbon cable shown in the figure to the rear side and connect it to the innermost connector.

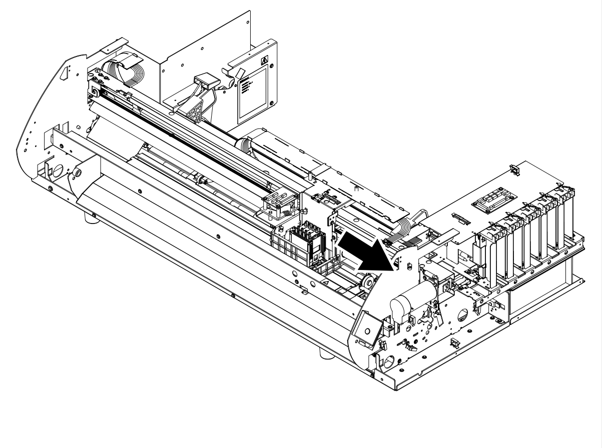

Top Ribbon Cable
Top Ribbon Cable

11 Attach the Head with the screws as shown in the figure.
You do not have to care about the order for attaching the screws.

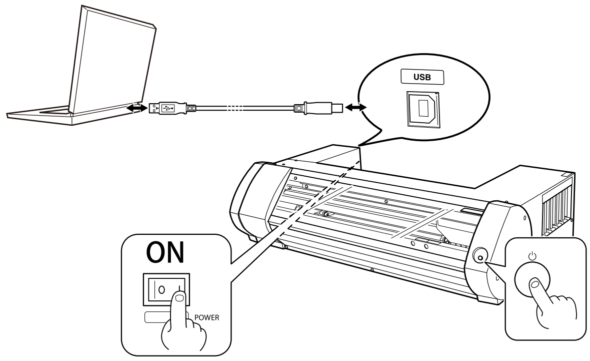
Use the 6kgf·cm torque driver (ST-056) and the hexagonal bit (1000006902 TOOL,BIT HEXAGONAL ST-118) to tighten up the screws.


<Right>
<Left>
Screw
Screw

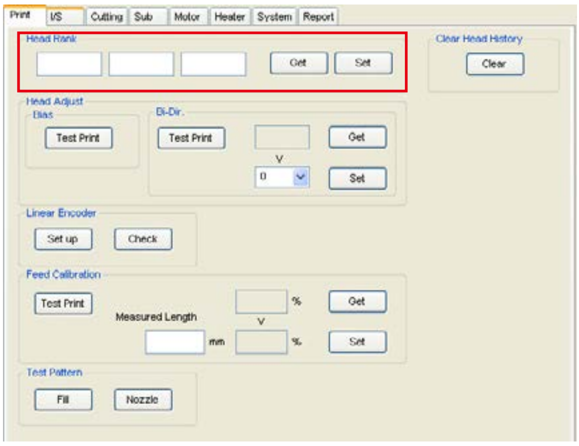
12 Move the Head Carriage to the capping position.



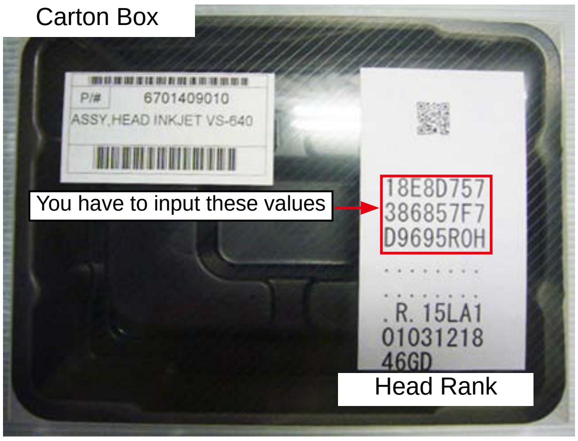
13 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

14 Start up the Service Application and input the Head Rank shown in the figure printed on the label on the carton box of the Head to [Print]>[Head Rank].
Then, click [Set] to to save the settings.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
mm
%
Get
Set
Test Pattern
Fill
Nozzle

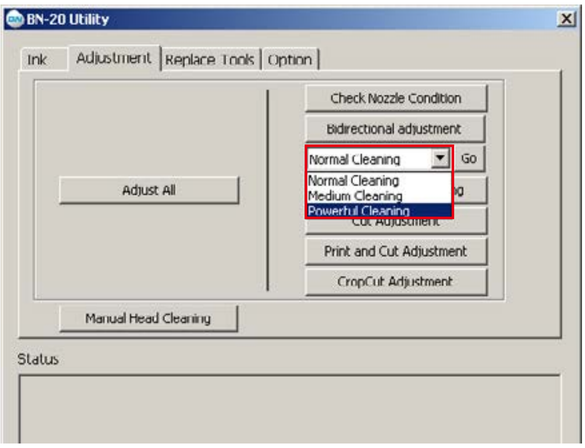
Carton Box


P/# 6701409010
ASSY,HEAD INKJET VS-640
18E8D757
386857F7
D9695R0H
. R. 15LA1
01031218
46GD

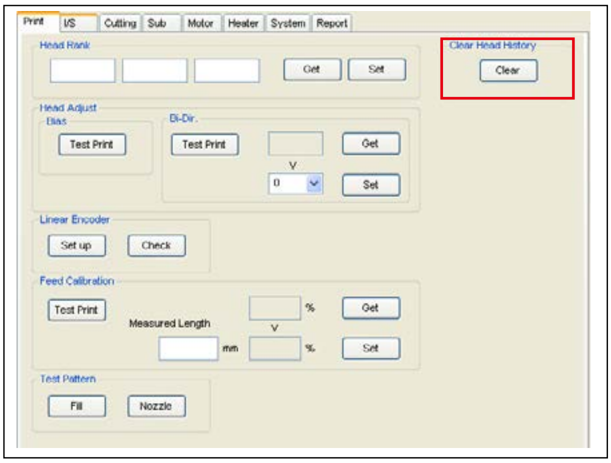
You have to input these values

Head Rank

15 Start up the BN20 Utillity and click [Adjustment]>[Powerful Cleaning]>[GO].


BN-20 Utility
Ink
Adjustment
Replace Tools
Option
Check Nozzle Condition
Bidirectional adjustment
Normal Cleaning
Go
Normal Cleaning
Medium Cleaning
Powerful Cleaning
Cut Adjustment
Print and Cut Adjustment
CropCut Adjustment
Adjust All
Manual Head Cleaning
Status

16 Clear the Head information.
Click [Print]>[Clear Head History]>[Clear] in the Service Application.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
%
Get
Measured Length
V
mm
%
Set
Test Pattern
Fill
Nozzle

17 Perform the following adjustments.

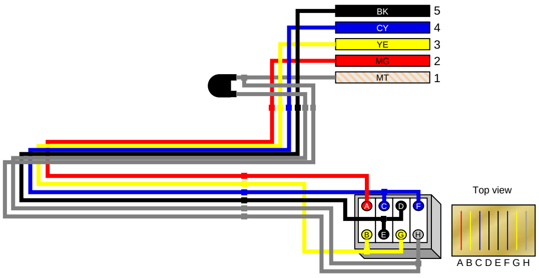
1. THERMISTER CHECK
Check the temperature in SERVICE APP > STATUS > TEMPERATURE > HEAD
2. Test Print
When the printing result has a banding, a missing dot, a scratchy printing, or a blurred printing, perform the cleaning again.
3. [4-3 HEAD ALIGNMENT]
4. [4-5 CROP-CUT ADJUSTMENT]
5. [4-6 PRINT / CUT POSITION ADJUSTMENT]

3-2 DAMPER REPLACEMENT

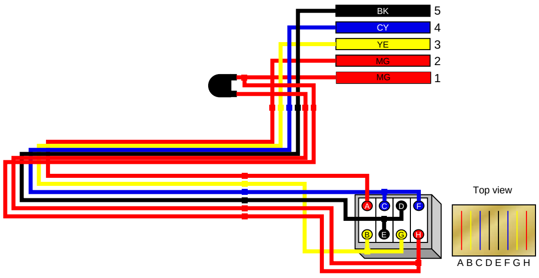
Before replacing the damper, check which ink is filled in the damper that you will replace by referring the following image.

BN-20

<CMYKMt>

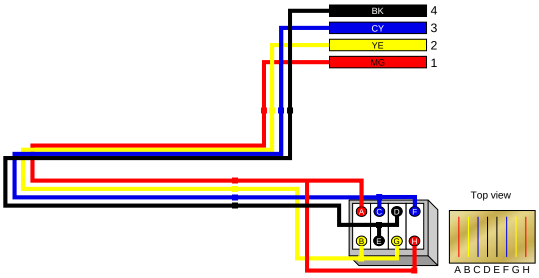

BK 5
CY 4
YE 3
MG 2
MT 1
A C D F
B E G H
Top view
A B C D E F G H

<CMYKM>


BK 5
CY 4
YE 3
MG 2
MG 1
A C D F
B E G H
Top view
A B C D E F G H

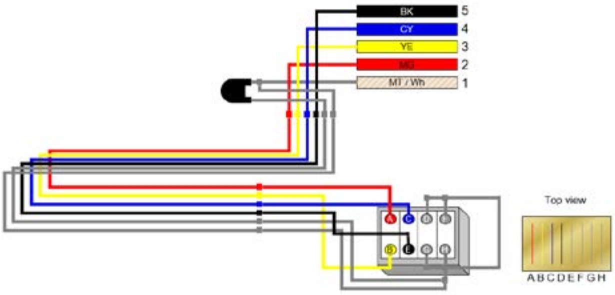
BN-20A

<CMYK>


BK 4
CY 3
YE 2
MG 1
A C D F
B E G H
Top view
A B C D E F G H

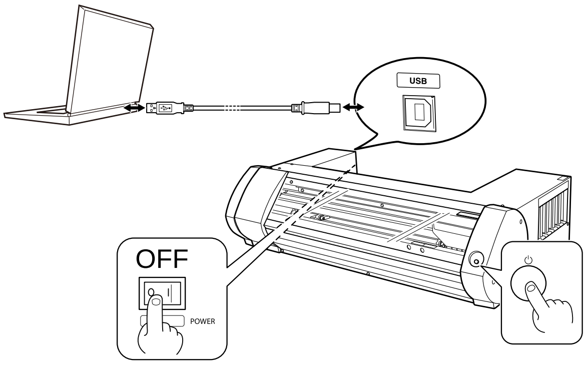
BN-20D

<CMYKMt/CMYKWh>


BK 5
CY 4
YE 3
MG 2
MT / Wh 1
A C D F
B E G H
Top view
A B C D E F G H

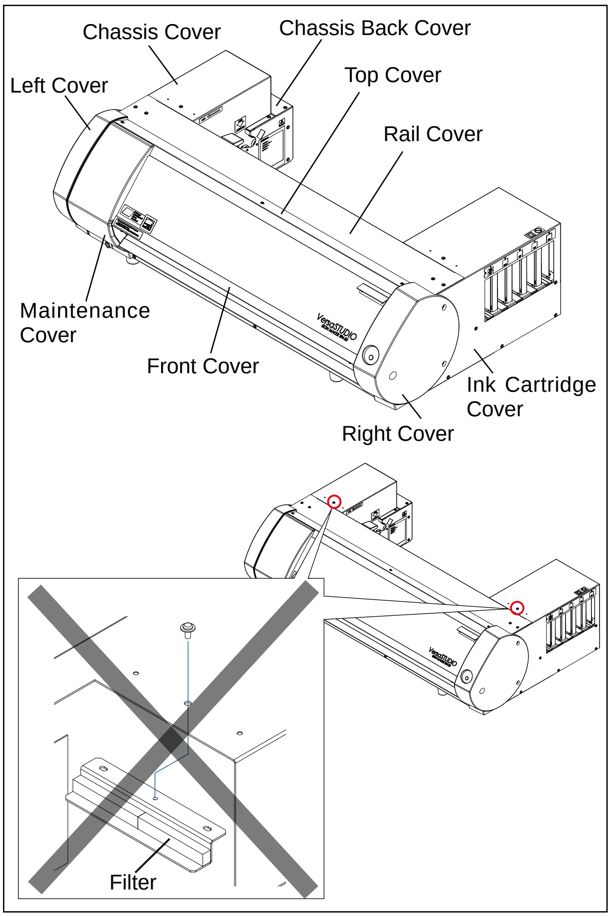
1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

Be sure to turn off the main power when replacing the head. The Head or Main Board could break, otherwise. It is recommended to disconnect the power cord.


USB
OFF
POWER

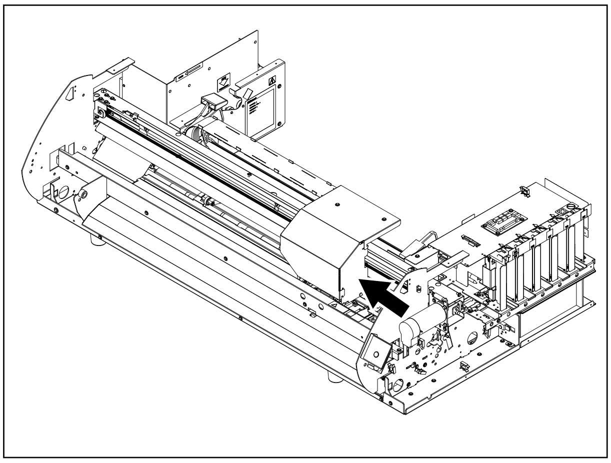
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

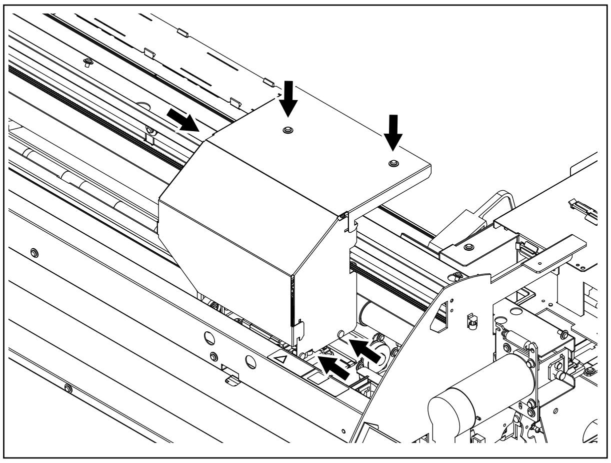

Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

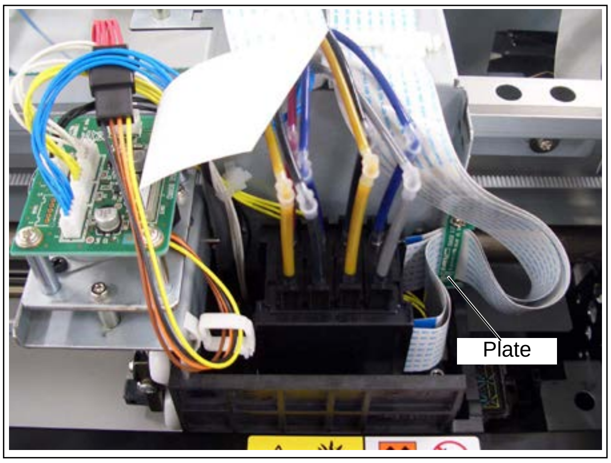
3 Move the Head Carriage on the Bed.



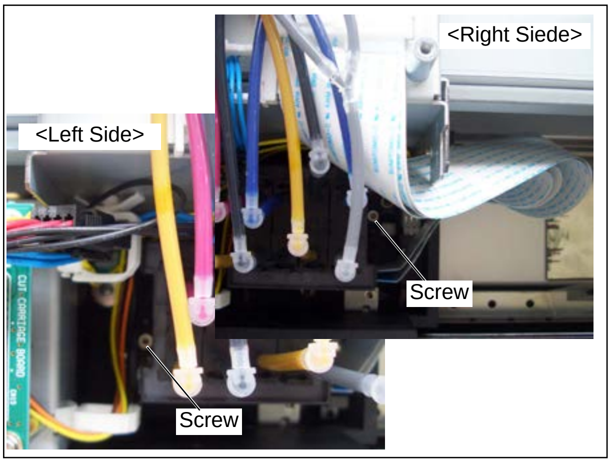
4 Remove the Head Carriage Cover.



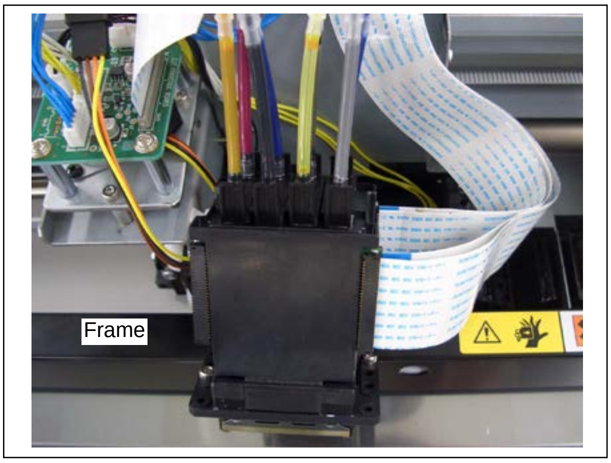
5 Remove the Plate which attaches the ribbon cables to the Head.



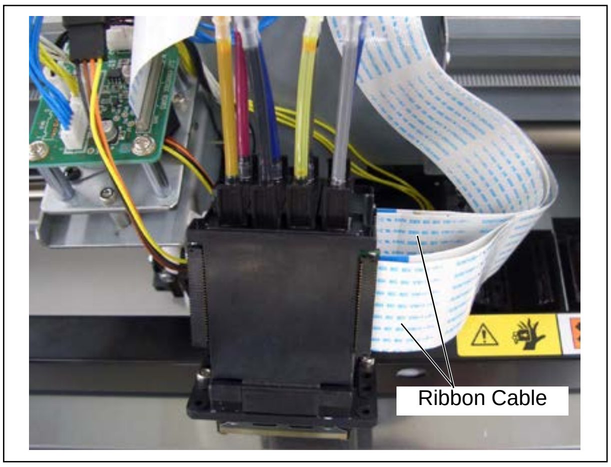
6 Unfold the ribbon cables and remove the screws attaching the Head.



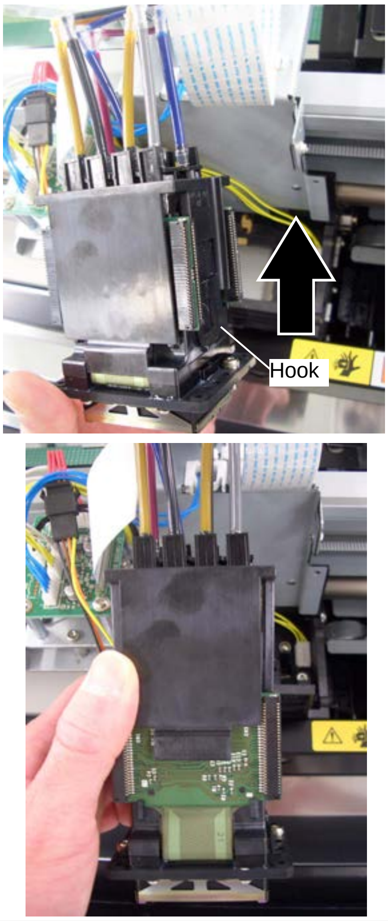
7 Lift up the Head and put it to the front of the Frame.
To prevent the ink from leaking or spattering, put the cloth under the Head.



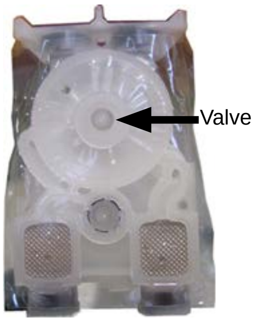
8 Disconnect the ribbon cables from the Head.
Put the disconnected Head Ribbon Cables underneath the Carriage Stay



9 Pull up the Damper, the ink tubes and the Head Covers slowly with opening the Hook of the Head Cover.

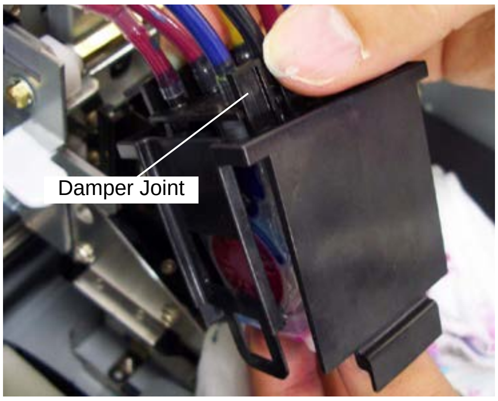


Do not touch the valve of the Damper. When you touch the valve, the ink leaks from the Damper.



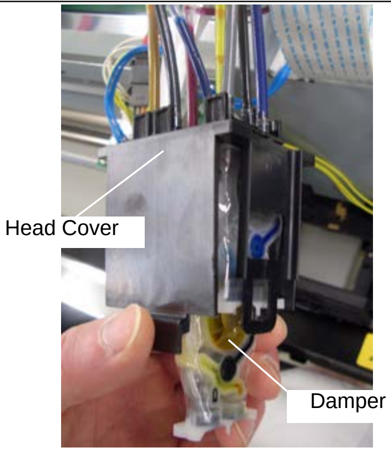
When the ink drops on the Head Board, the Head will be broken.

10 Pick the both ends of the Damper Joint and remove it from the Damper.

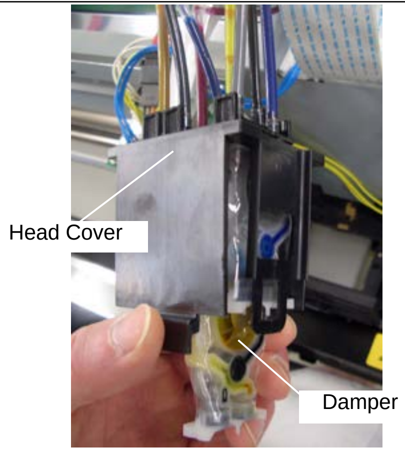


Ink leaks from the Damper right after removing the Damper Joint.

11 Pull out the Damper from the Head Cover.

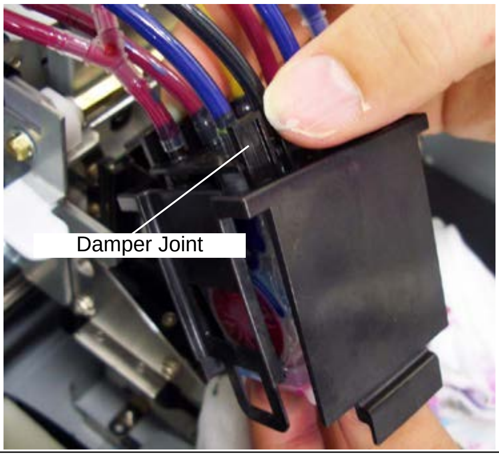


12 Insert the new Damper into the Head Cover.



The Damper has no particular right or left orientation.

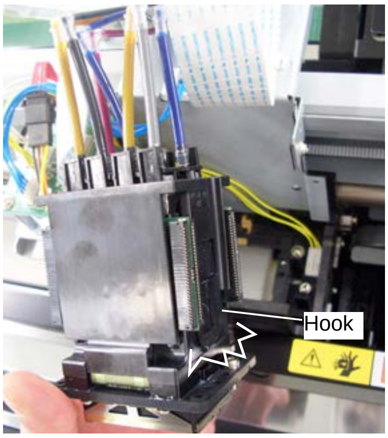
13 Connect the Damper Joint to the Damper with supporting the bottom of the Damper.



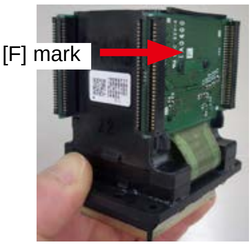
Opening the both ends of the Damper Joint makes you attach it easily.

Check whether the Damper Joint cannot be removed by pulling up it.

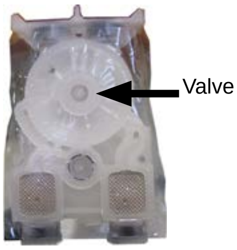
14 Attach the Damper, the ink tubes and the Head Cover set to the new Head.



Attach the Head with turning the [F] mark on the board to the front.



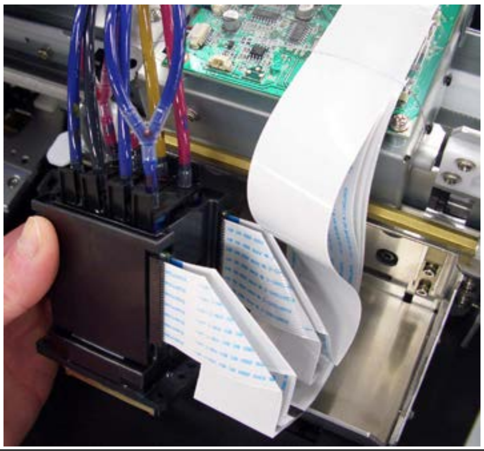
Do not touch the valve of the Damper. When you touch the valve, the ink leaks from the Damper.



Press the Head Cover to the Head until the hook of the Head Cover clicks into place.

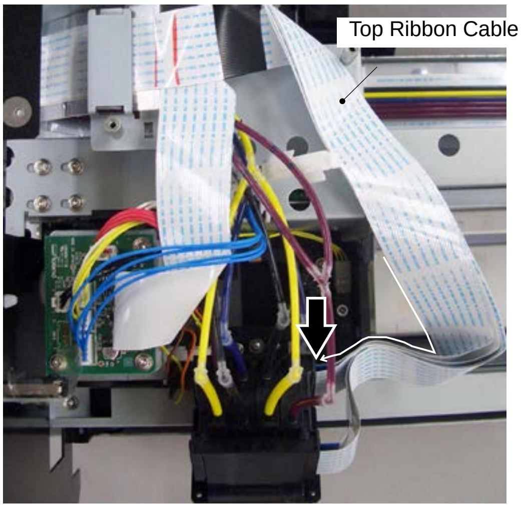
Be careful not to make the head surface touch with the Head Carriage Base.

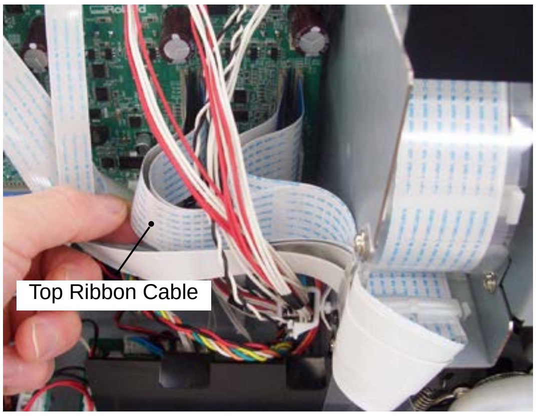
15 Connect the Ribbon Cables.



Do not connect the cables to the wrong connector or connect the cables halfway. The Head will be broken.

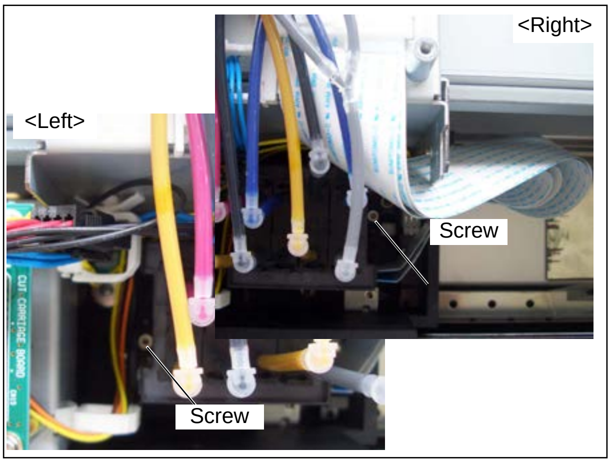
16 Turn the character side of the top ribbon cable shown in the figure to the rear side and connect it to the innermost connector.


Top Ribbon Cable

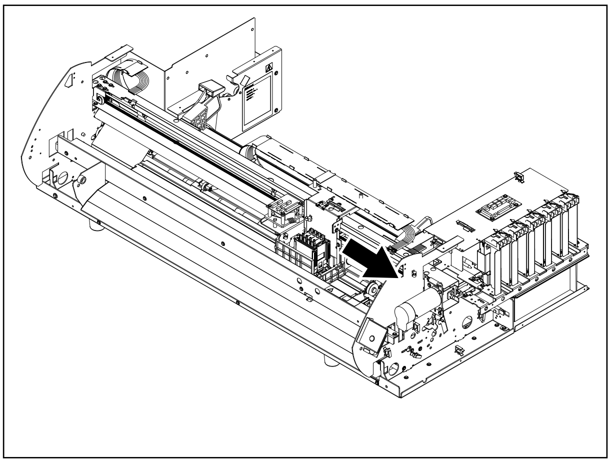

Top Ribbon Cable

17 Attach the Head with the screws as shown in the figure. You do not have to care about the order for attaching the screws.

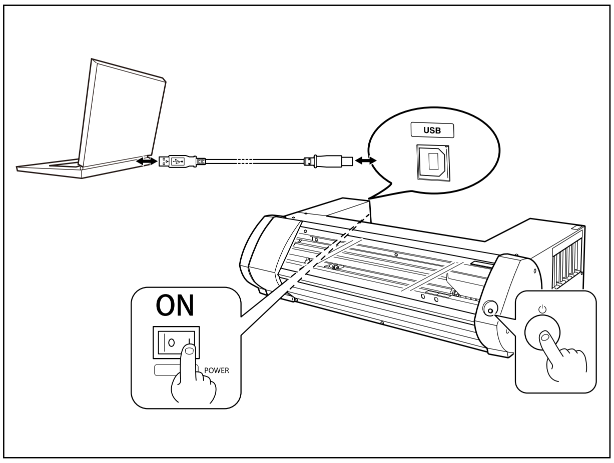
Use the 6kgf·cm torque driver (ST-056) and the hexagonal bit (1000006902 TOOL,BIT HEXAGONAL ST-118) to tighten up the screws.


<Right>
<Left>
Screw
Screw

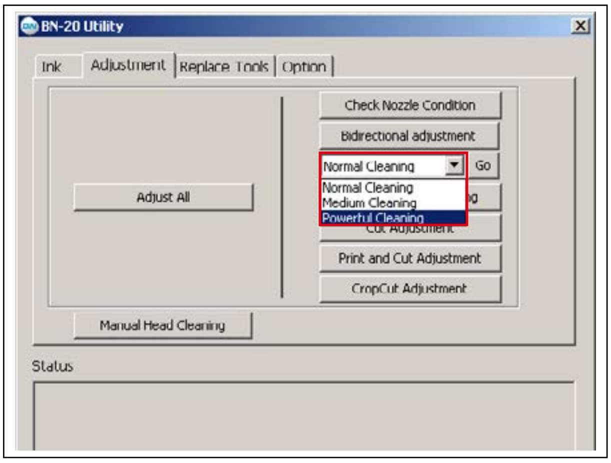
18 Move the Head Carriage to the capping position.



19 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.

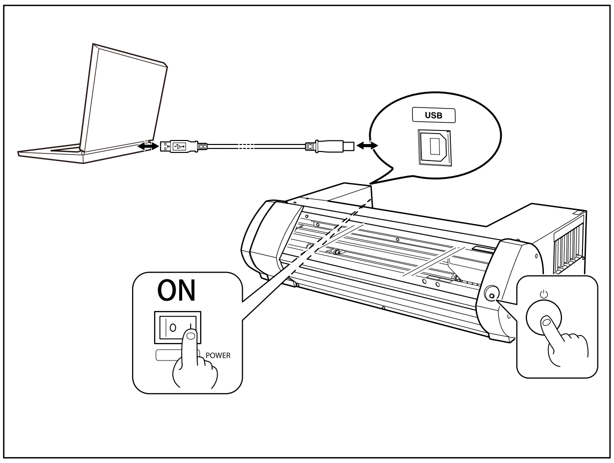

USB
ON
POWER

20 Start up the BN20 Utillity and click [Adjustment]>[Powerful Cleaning]>[GO].

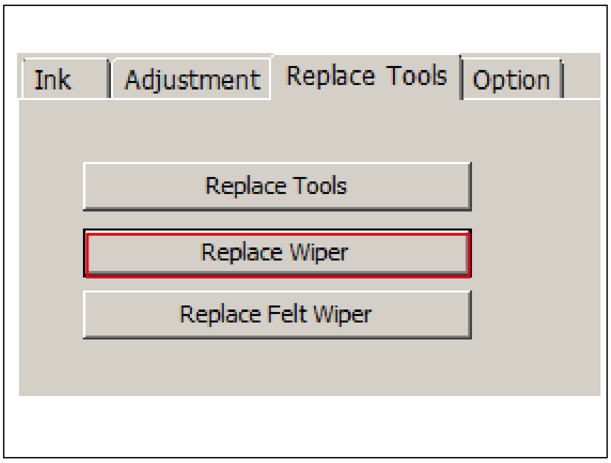

BN-20 Utility
Ink
Adjustment
Replace Tools
Option
Check Nozzle Condition
Bidirectional adjustment
Normal Cleaning
Go
Normal Cleaning
Medium Cleaning
Powerful Cleaning
Adjust All
Cut Adjustment
Print and Cut Adjustment
CropCut Adjustment
Manual Head Cleaning
Status

3-3 WIPER / FELT WIPER REPLACEMENT

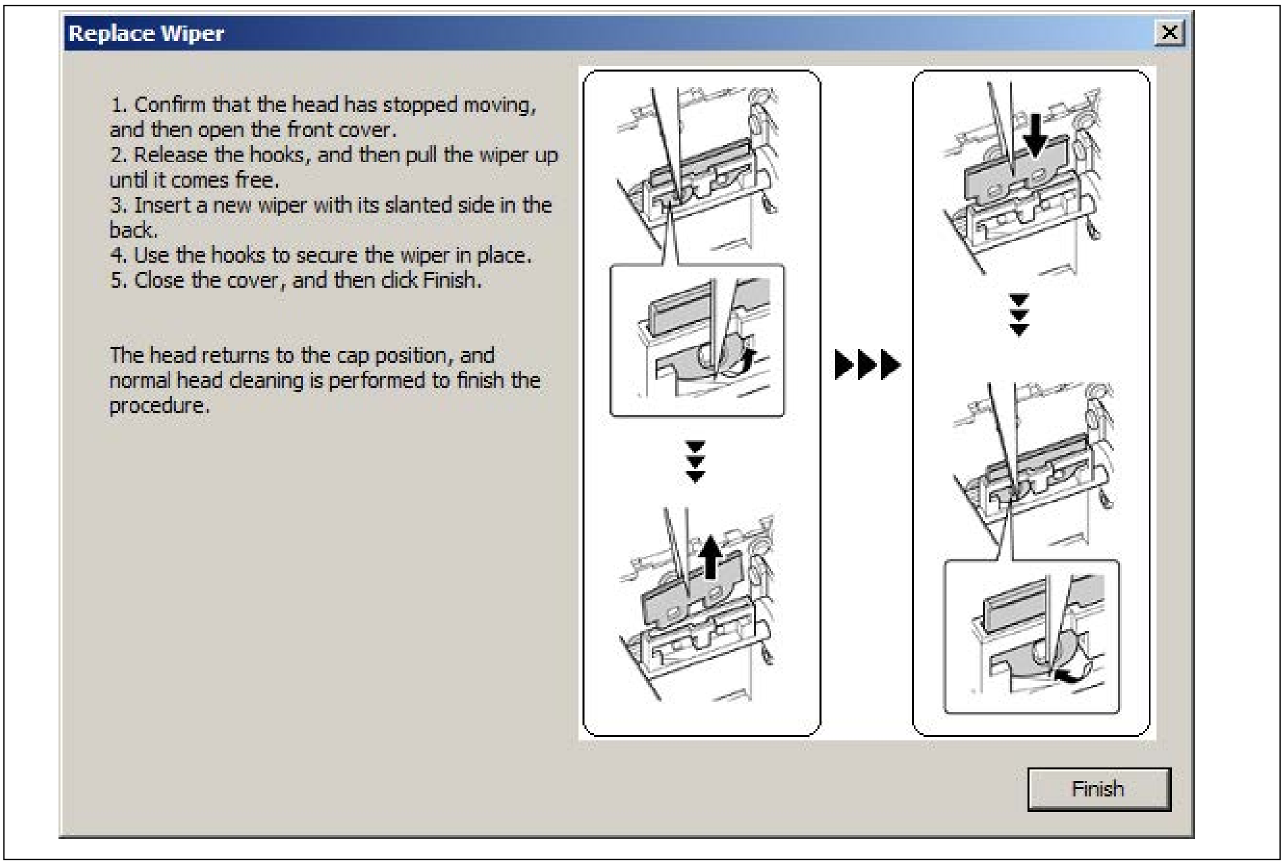
1 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

2 Start up the BN20 Utillity and click [Replace Tools]>[Replace Wiper] or [Replace Felt Wiper].

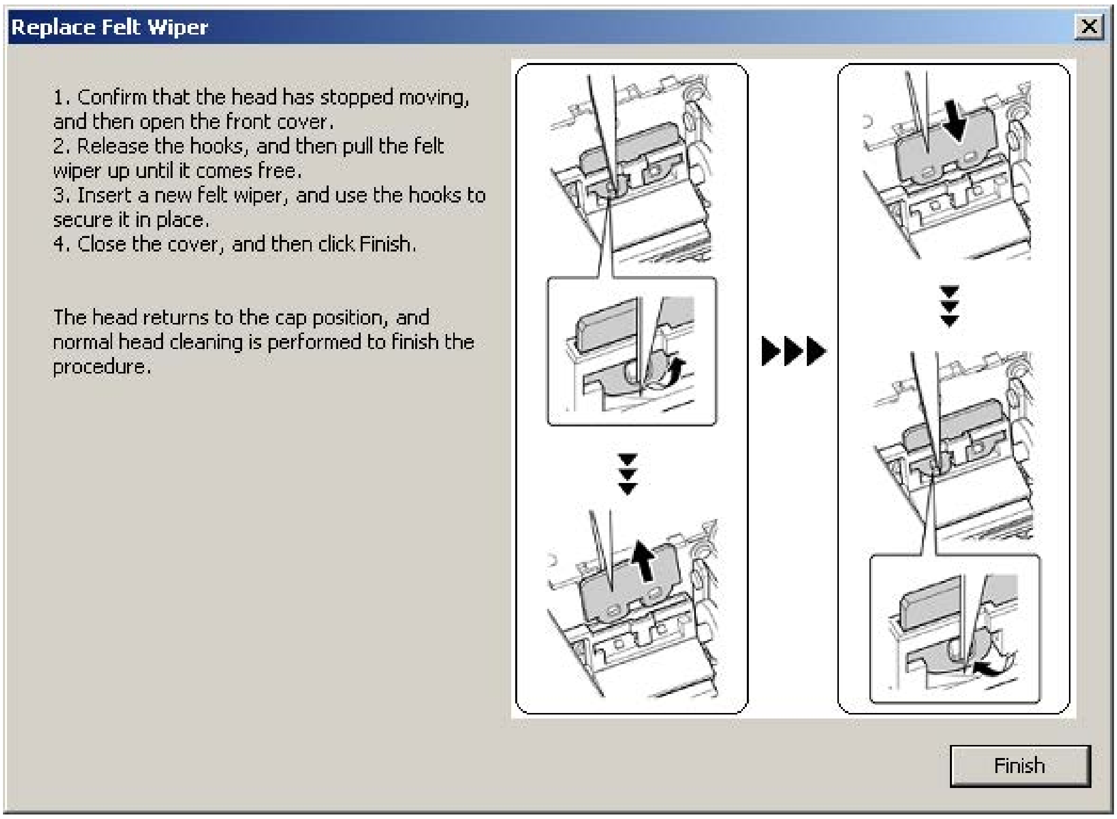

Ink
Adjustment
Replace Tools
Option
Replace Tools
Replace Wiper
Replace Felt Wiper

3 Replace the Wiper by following [Replace Wiper] or [Replace Felt Wiper] wizard which describes how to replace the wiper.


Replace Wiper

1. Confirm that the head has stopped moving, and then open the front cover.
2. Release the hooks, and then pull the wiper up until it comes free.
3. Insert a new wiper with its slanted side in the back.
4. Use the hooks to secure the wiper in place.
5. Close the cover, and then click Finish.

The head returns to the cap position, and normal head cleaning is performed to finish the procedure.

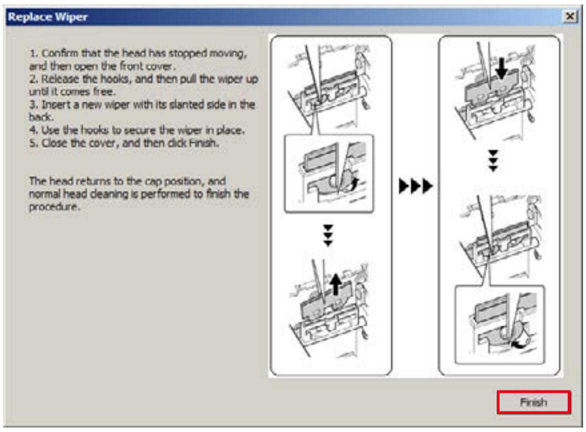


Replace Felt Wiper

1. Confirm that the head has stopped moving, and then open the front cover.
2. Release the hooks, and then pull the felt wiper up until it comes free.
3. Insert a new felt wiper, and use the hooks to secure it in place.
4. Close the cover, and then click Finish.

The head returns to the cap position, and normal head cleaning is performed to finish the procedure.

4 When you finish replacing the wiper, click [Finish].
Then, the printer starts clanaing automatiaclly after clicking [Finish].

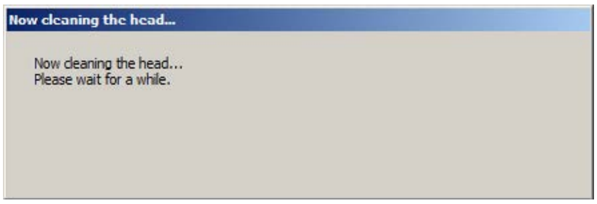


Replace Wiper

1. Confirm that the head has stopped moving, and then open the front cover.
2. Release the hooks, and then pull the wiper up until it comes free.
3. Insert a new wiper with its slanted side in the back.
4. Use the hooks to secure the wiper in place.
5. Close the cover, and then click Finish.

The head returns to the cap position, and normal head cleaning is performed to finish the procedure.

5 The message shown in the figure is displayed during performing the cleaning. When the cleaning is finished, the message is disappeared. This means that the replacement operation is completed.



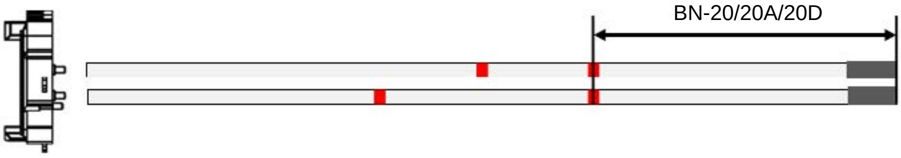
Now cleaning the head...

Now cleaning the head...
Please wait for a while.

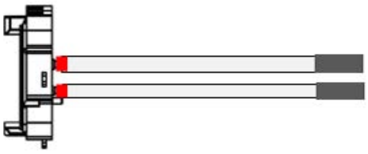
3-4-1 CAP TOP REPLACEMENT (BN-20/20A/20D)

When using cap tops with markings on the tube, cut the tube in advance at the position of the following markings.

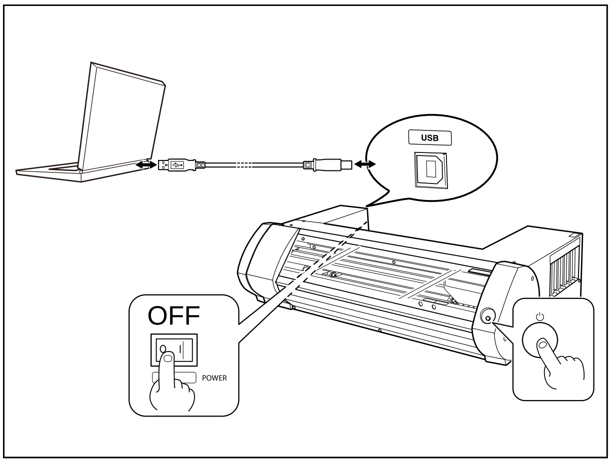
1) Remove the tubes from the cap top and cut them in the marked positions. Use the one with the black tube.


BN-20/20A/20D

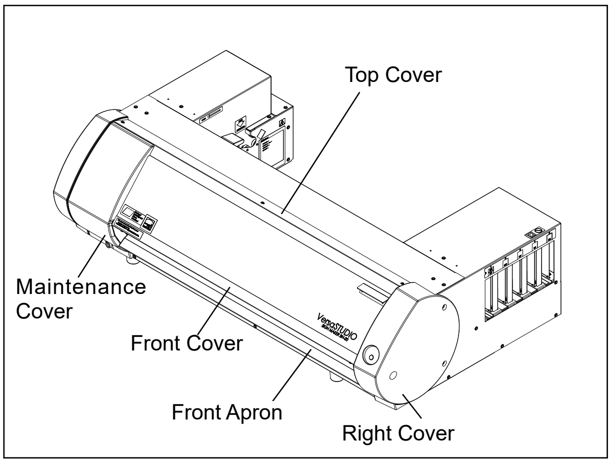
2) Attach the cut tube to the cap top.



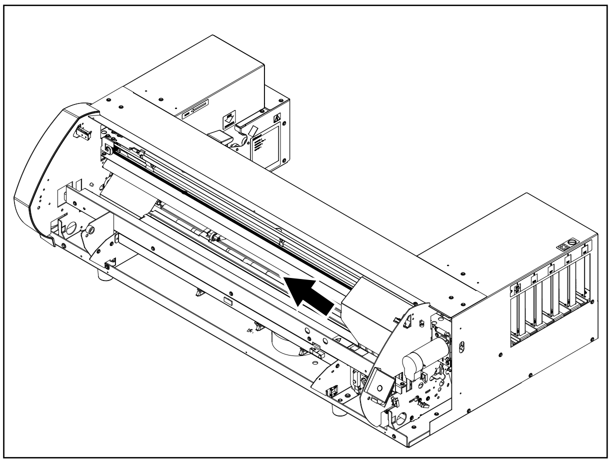
1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

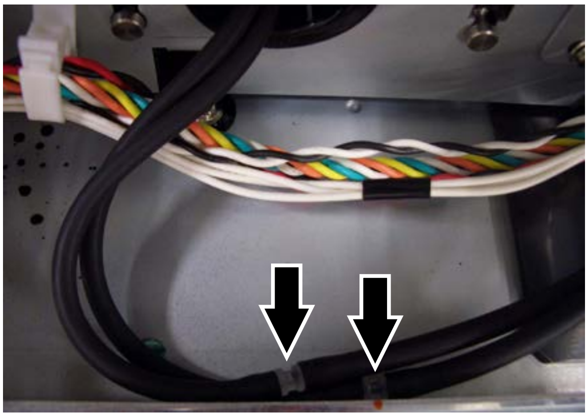
2 Remove Right Cover, Maintenance Cover, Top Cover, Front Cover and Front Apron.


Top Cover
Maintenance Cover
Front Cover
Front Apron
Right Cover

3 Move the Head Carriage on the Bed.

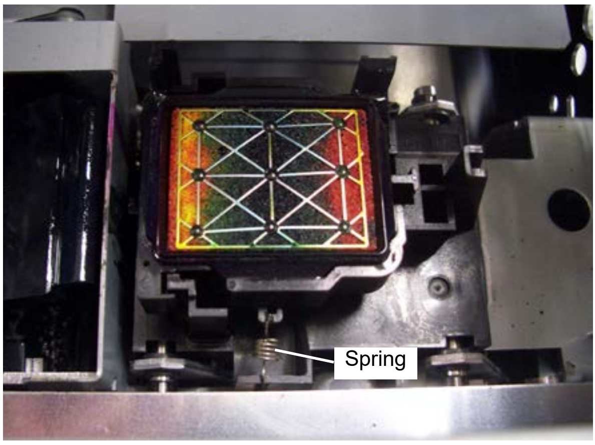


4 Remove the tubes of the Cap Top from the connection parts shown in the figure.



5 Remove the Spring.

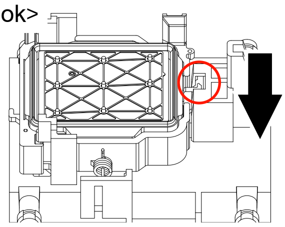
Do not lose the Spring becasue it is small.

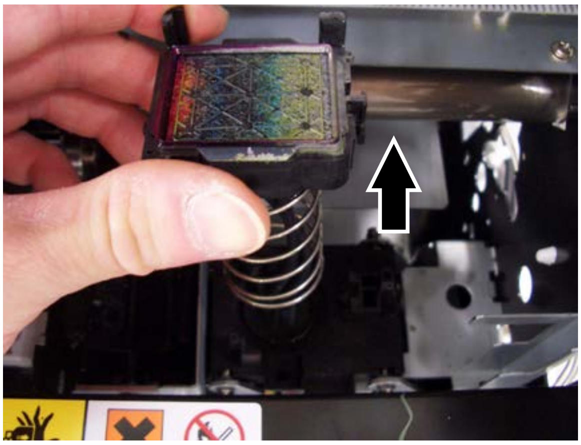


6 Remove the Cap Top with pressing the [T] shape hook downward and pull up the Cap Top.

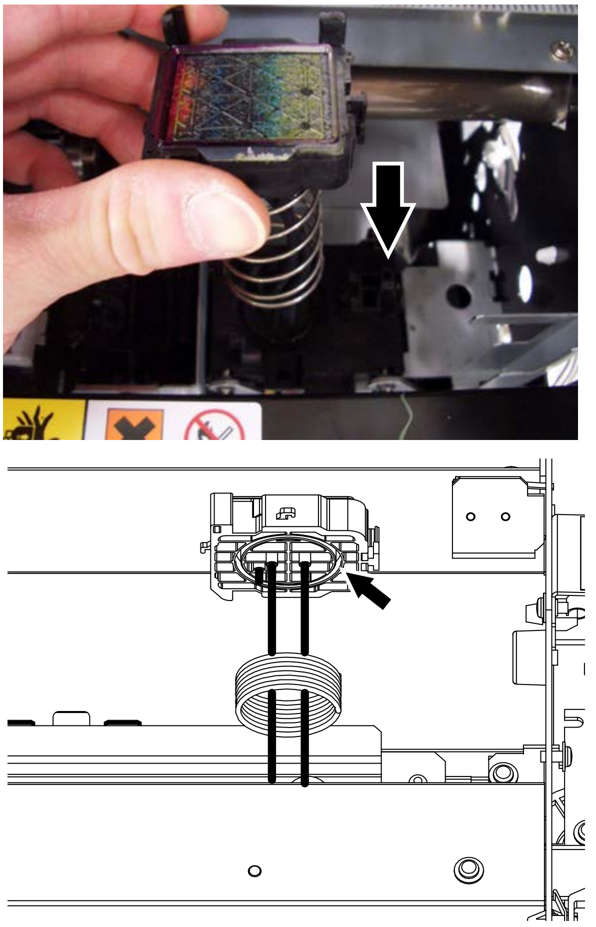
Be careful with the ink leakage from the tubes when you pull up the Cap Top.

<[T] shape hook>



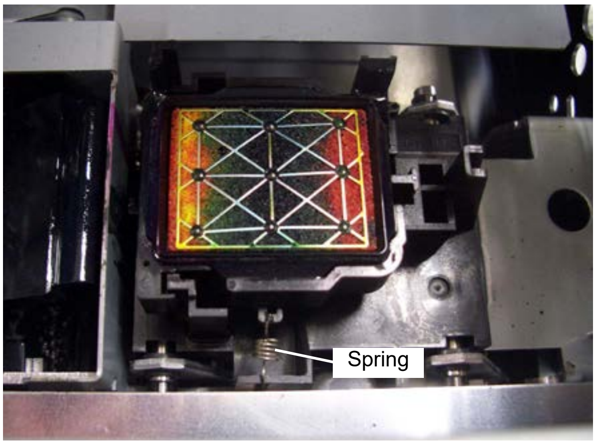


7 Attach the new Cap Top by fitting the [T] shape hook with the Cap Top Base.

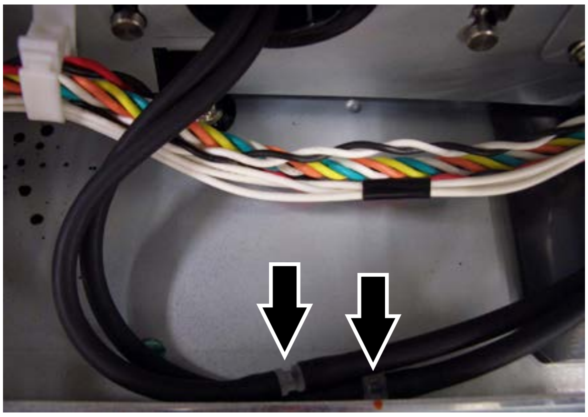


When you attach the Cap Top, fit the Spring in the Groove on the bottom of the Cap Top.

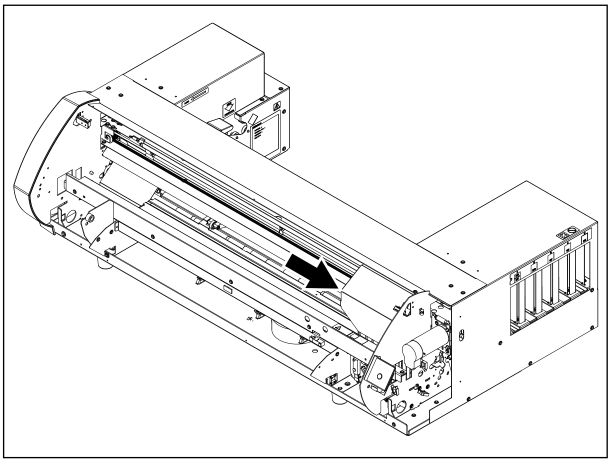
8 Attach the Spring.



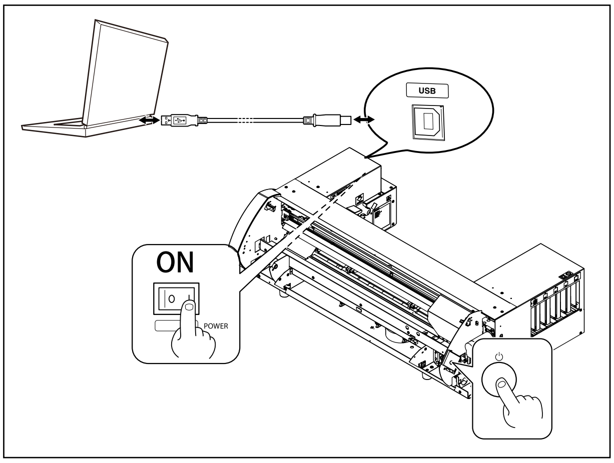
9 Connect the tubes of the Cap Top to the connection parts shown in the figure.



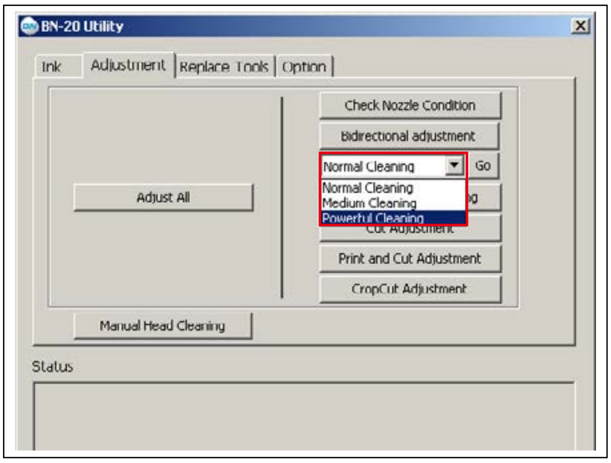
10 Move the Head Carriage to the capping position.



11 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

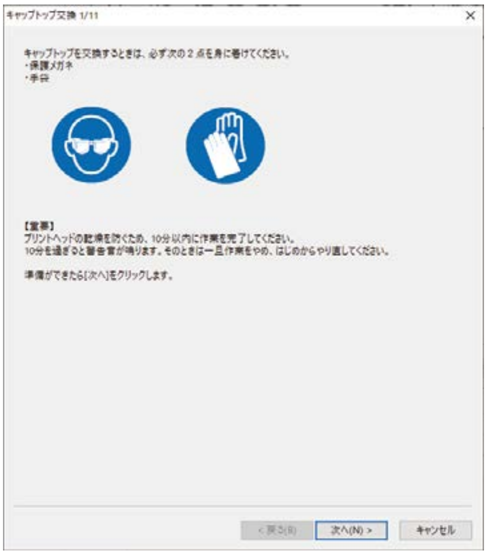
12 Start up the BN20 Utillity and click [Adjustment]>[Powerful Cleaning]>[GO].


BN-20 Utility
Ink
Adjustment
Replace Tools
Option
Check Nozzle Condition
Bidirectional adjustment
Normal Cleaning
Go
Normal Cleaning
Medium Cleaning
Powerful Cleaning
Cut Adjustment
Adjust All
Print and Cut Adjustment
CropCut Adjustment
Manual Head Cleaning
Status

3-4-2 CAP TOP REPLACEMENT (BN-20D User Replacement) △25 △26

In BN-20D, the cap top can be replaced by the user using the utility. Follow the instructions on the screen below to replace Cap top.

1

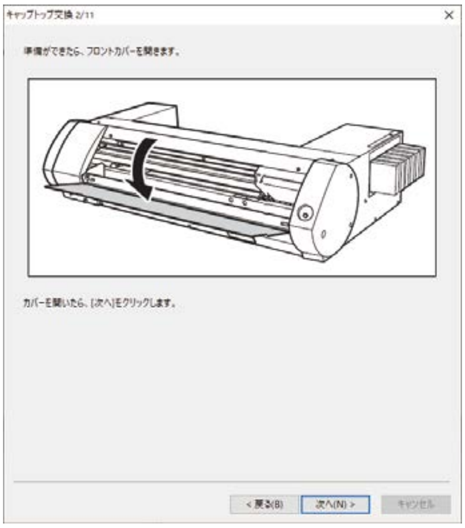

キャップトップ交換 1/11
< 戻る(B)
次へ(N) >
キャンセル

キャップトップを交換するときは、必ず次の２点を身に着けてください。
・保護メガネ
・手袋

【重要】
プリントヘッドの乾燥を防ぐため、10分以内に作業を完了してください。
10分を過ぎると警告音が鳴ります。そのときは一旦作業をやめ、はじめからやり直してください。

準備ができたら[次へ]をクリックします。

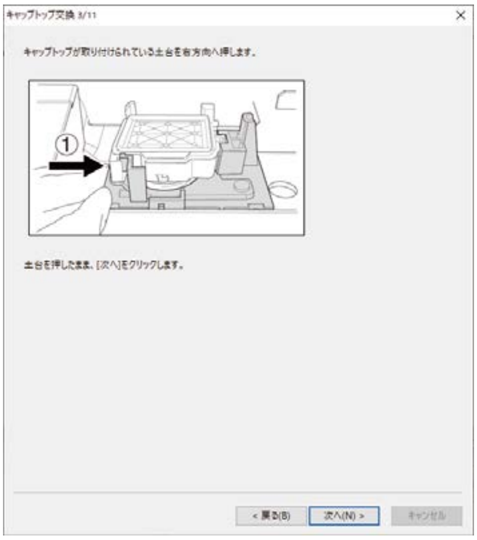
2


キャップトップ交換 2/11
< 戻る(B)
次へ(N) >
キャンセル

準備ができたら、フロントカバーを開きます。

カバーを開いたら、[次へ]をクリックします。

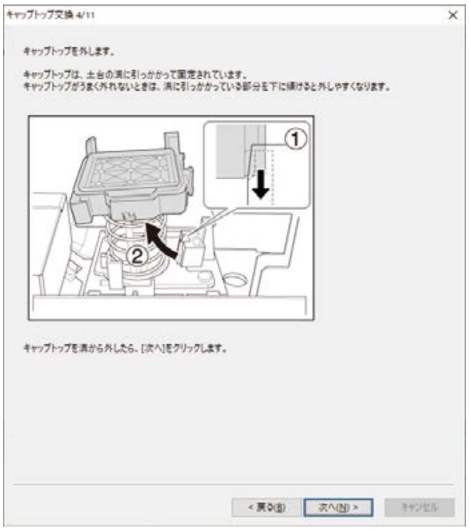
3


キャップトップ交換 3/11
①
< 戻る(B)
次へ(N) >
キャンセル

キャップトップが取り付けられている土台を右方向へ押します。

土台を押したまま、[次へ]をクリックします。

4

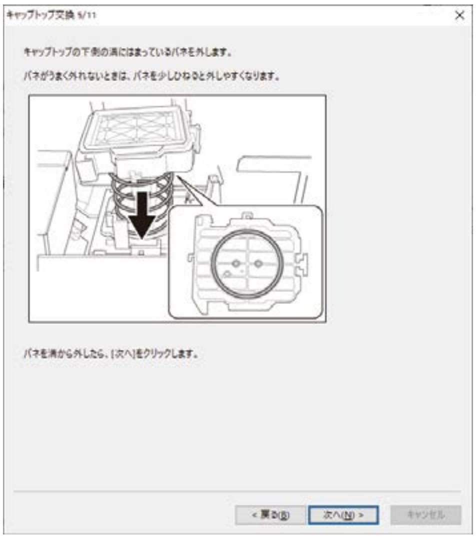

キャップトップ交換 4/11
①
②
< 戻る(B)
次へ(N) >
キャンセル

キャップトップを外します。

キャップトップは、土台の溝に引っかかって固定されています。
キャップトップがうまく外れないときは、溝に引っかかっている部分を下に傾けると外しやすくなります。

キャップトップを溝から外したら、[次へ]をクリックします。

5

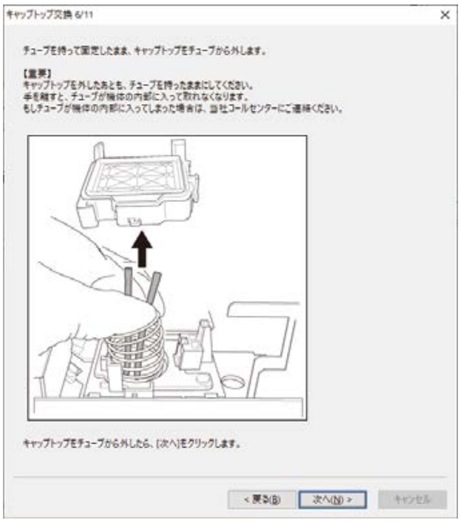

キャップトップ交換 5/11
< 戻る(B)
次へ(N) >
キャンセル

キャップトップの下側の溝にはまっているバネを外します。

バネがうまく外れないときは、バネを少しひねると外しやすくなります。

バネを溝から外したら、[次へ]をクリックします。

6

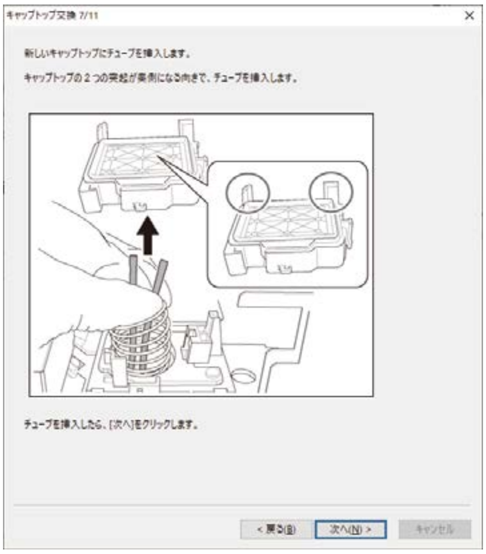

キャップトップ交換 6/11
< 戻る(B)
次へ(N) >
キャンセル

チューブを持って固定したまま、キャップトップをチューブから外します。

【重要】
キャップトップを外したあとも、チューブを持ったままにしてください。
手を離すと、チューブが機体の内部に入って取れなくなります。
もしチューブが機体の内部に入ってしまった場合は、当社コールセンターにご連絡ください。

キャップトップをチューブから外したら、[次へ]をクリックします。

7

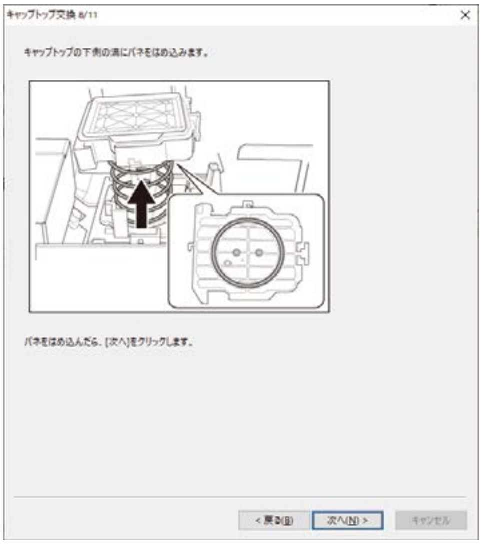

キャップトップ交換 7/11
×
< 戻る(B)
次へ(N) >
キャンセル

新しいキャップトップにチューブを挿入します。

キャップトップの 2 つの突起が奥側になる向きで、チューブを挿入します。

チューブを挿入したら、[次へ]をクリックします。

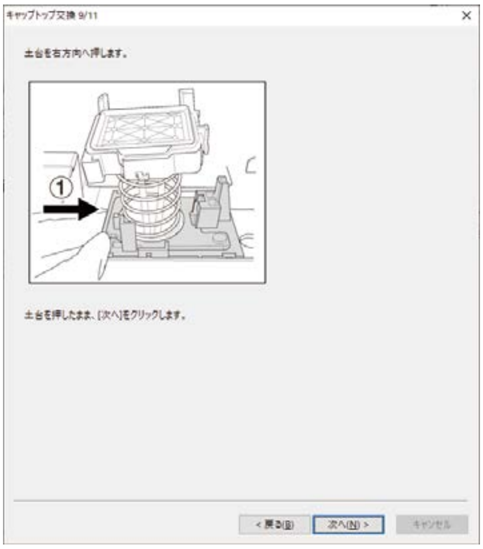
8


キャップトップ交換 8/11
×
< 戻る(B)
次へ(N) >
キャンセル

キャップトップの下側の溝にバネをはめ込みます。

バネをはめ込んだら、[次へ]をクリックします。

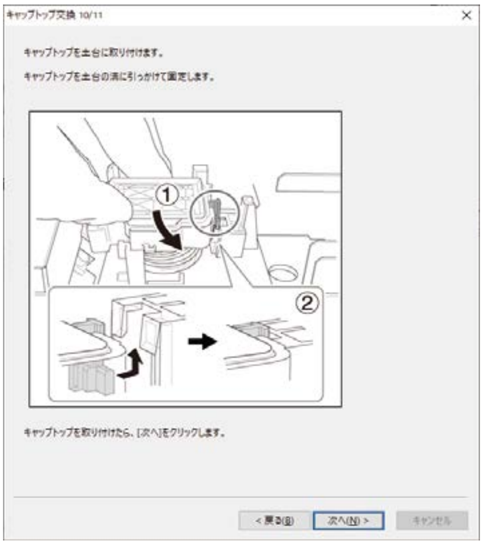
9


キャップトップ交換 9/11
×
①
< 戻る(B)
次へ(N) >
キャンセル

土台を右方向へ押します。

土台を押したまま、[次へ]をクリックします。

10

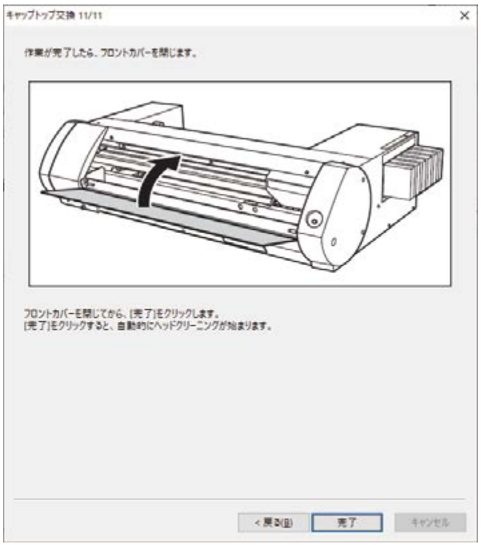

キャップトップ交換 10/11
×
①
②
< 戻る(B)
次へ(N) >
キャンセル

キャップトップを土台に取り付けます。

キャップトップを土台の溝に引っかけて固定します。

キャップトップを取り付けたら、[次へ]をクリックします。

11

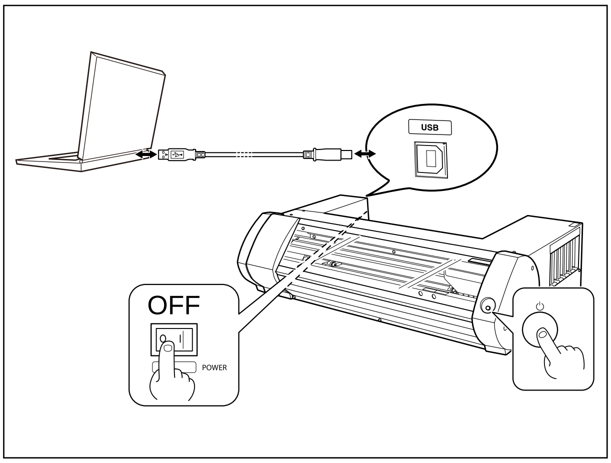

キャップトップ交換 11/11
×
< 戻る(B)
完了
キャンセル

作業が完了したら、フロントカバーを閉じます。

フロントカバーを閉じてから、[完了]をクリックします。
[完了]をクリックすると、自動的にヘッドクリーニングが始まります。

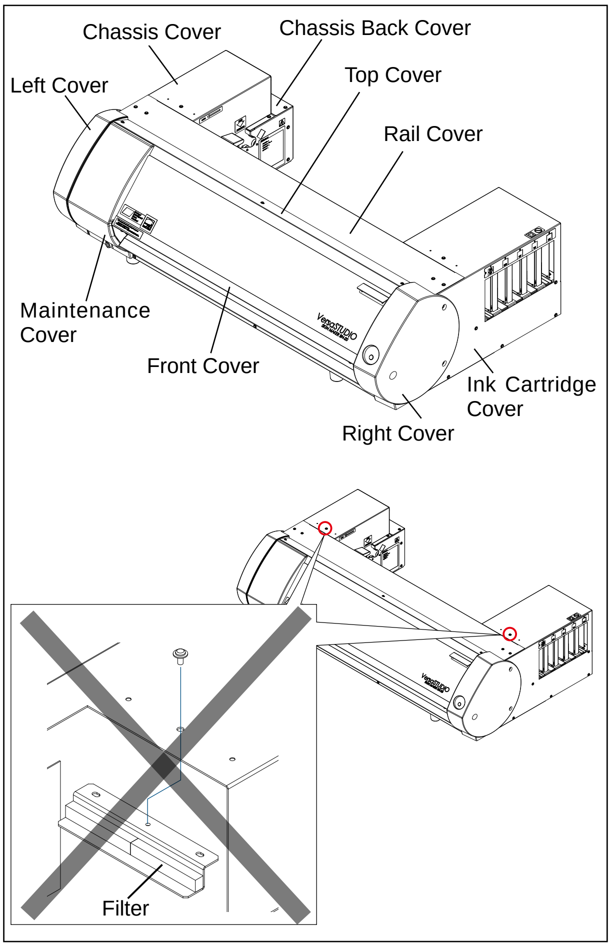
3-5 TOOL MOTOR REPLACEMENT

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

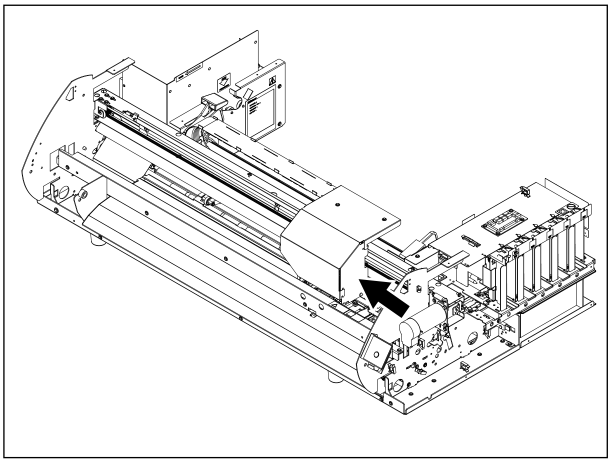
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

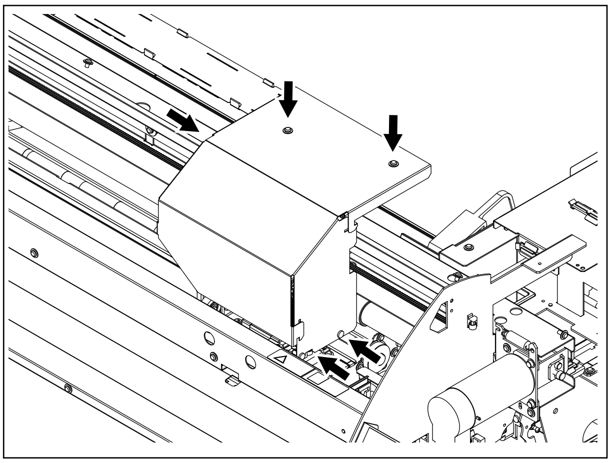

Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

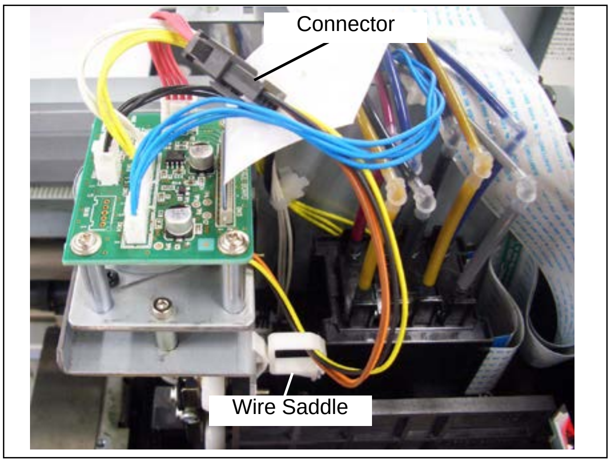
3 Move the Head Carriage on the Bed.



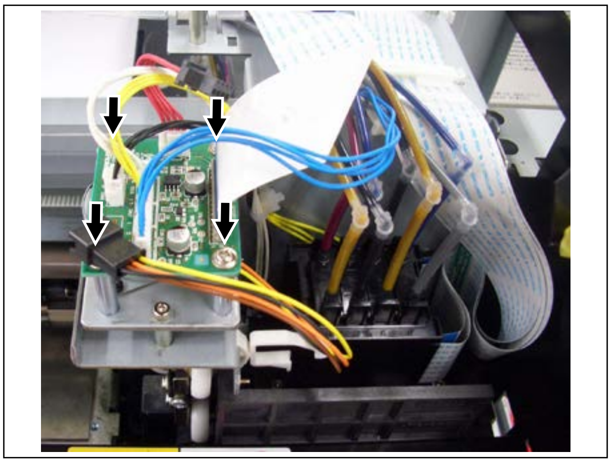
4 Remove the Head Carriage Cover.



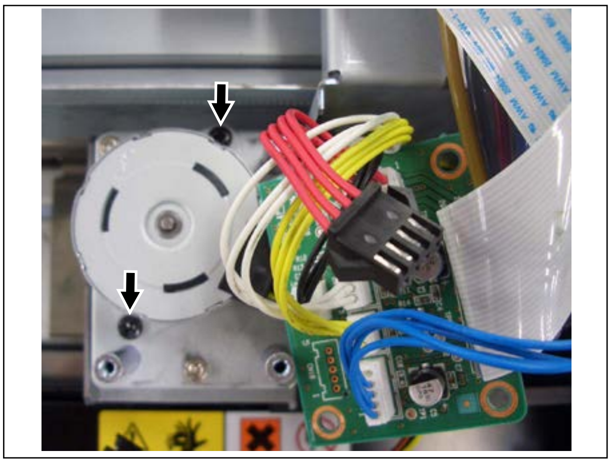
5 Open the Wire Saddle which attahes the cable of the Tool U/D Motor and disconnect the connectors of the cables.



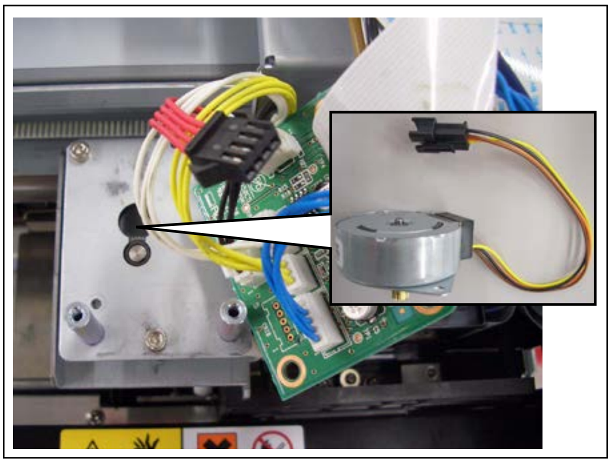
6 Remove the screws attaching the Cut Carriage Board.



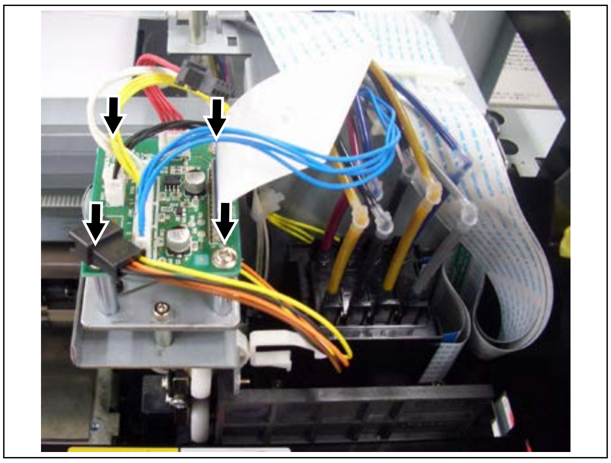
7 Place the Cut Carriage Board to the right and remove the screws attaching the Tool U/D Motor.



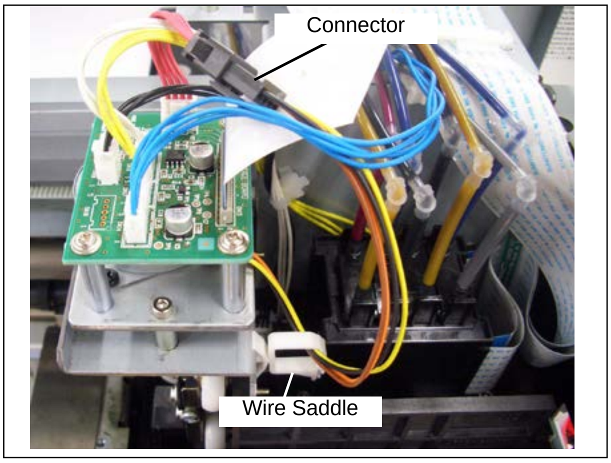
8 Replace the Tool U/D Motor with the new one. .



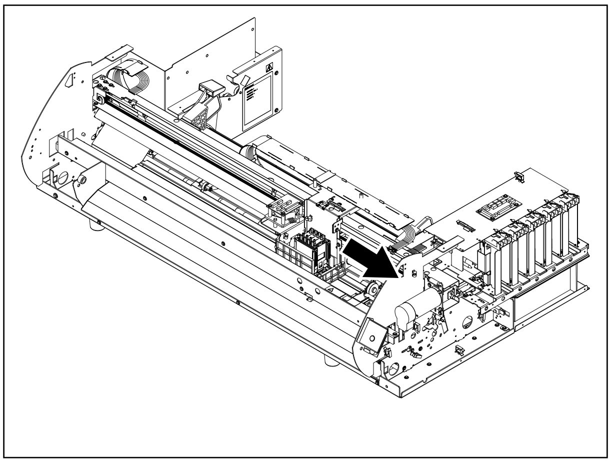
9 Attach the Cut Carriage Board.



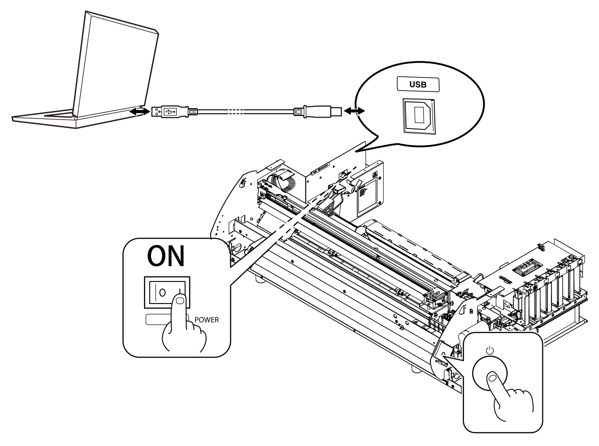
10 Attahes the cable of the Tool U/D Motor with the Wire Saddle and connect the connectiors of the cables.



11 Move the Head Carriage to the capping position.

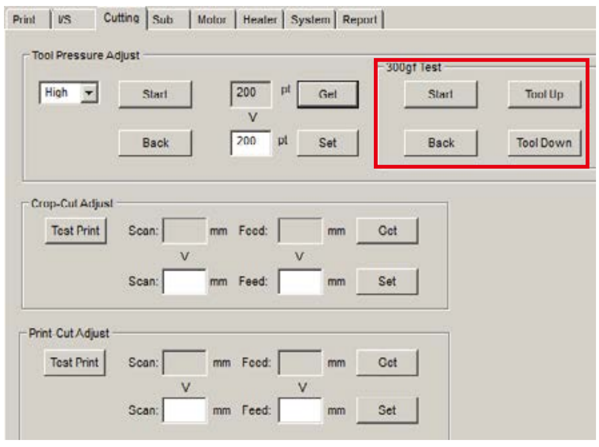


12 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

13 Start up the Service Application and click [Cutting]>[300gf Test]>[Start]. The Head Carriage moves to the position where the test is performed.
Then, check whether the tool moves up and down by clicking [Tool Up] and [Tool Down]. Click [Back] when the tool moves up and down correctly.

When the tool does not moves up or down, check the followings.
1. Connection of the Tool U/D Motor
2. Check that the gears are meshed correctly.


Tool Pressure Adjust: High; 200 pt; 200 pt

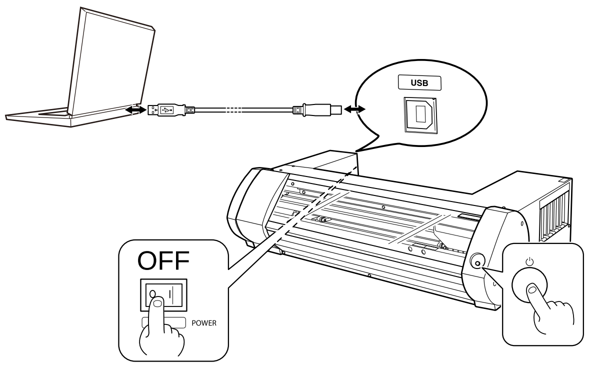
Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
Get
Back
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
Scan:
mm
Feed:
mm
Set
Print Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
Scan:
mm
Feed:
mm
Set

14 Perform the following adjustments and settings.

1. [4-8 TOOL PRESSURE ADJUSTMENT]
2. [4-5 CROP-CUT ADJUSTMENT]
3. [4-6 PRINT / CUT POSITION ADJUSTMENT]

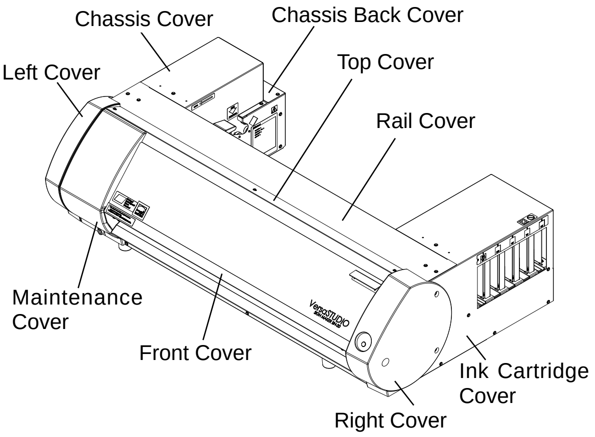
3-6 CARRIAGE MOTOR REPLACEMENT ⚠20

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

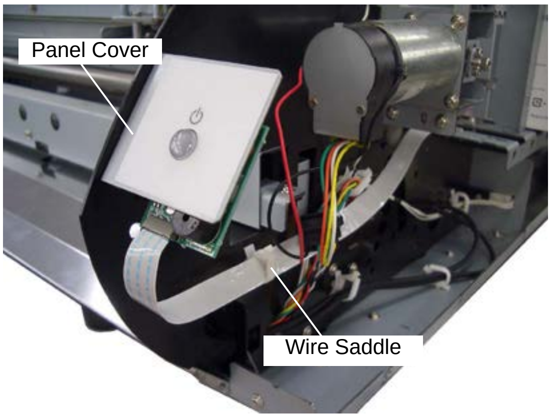

USB
OFF
POWER

2 Remove the following covers in order.

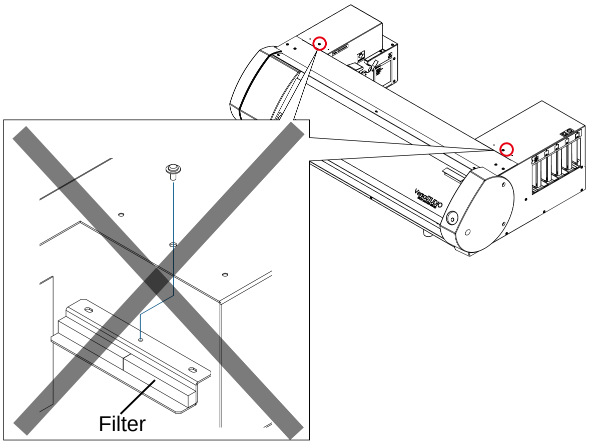
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover
10. Panel Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

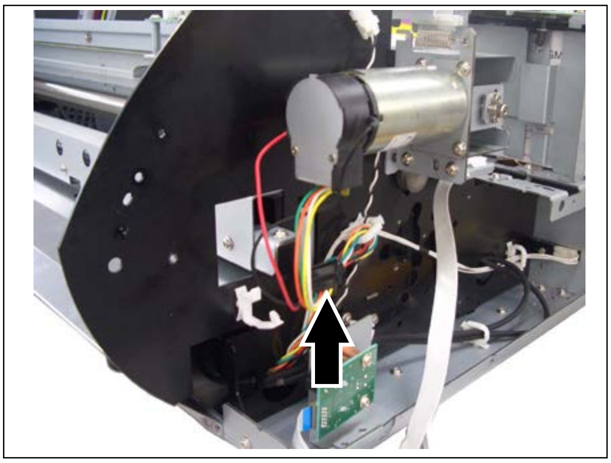
When removing the Panel Cover, open the Wire Saddle shown in the figure nad place the Panel Cover under the Carriage Motor


Panel Cover
Wire Saddle

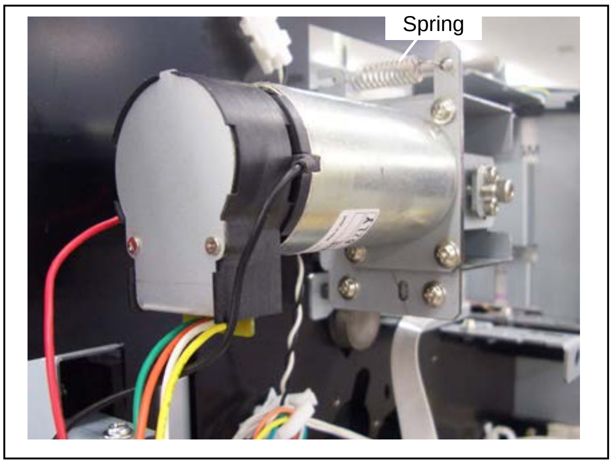
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.



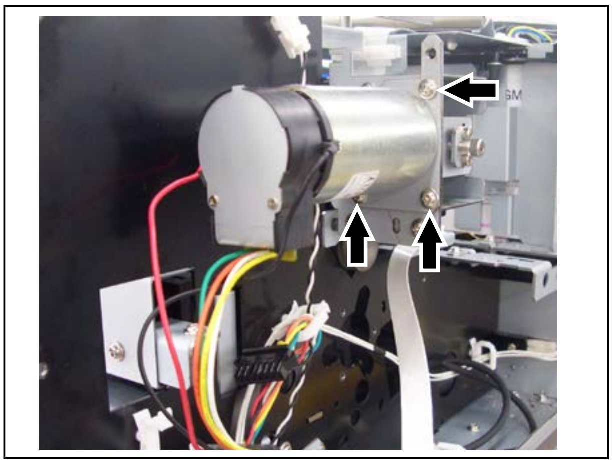
3 Disconnect the connector of the Motor Cable.



4 Remove the spring on the Flange.

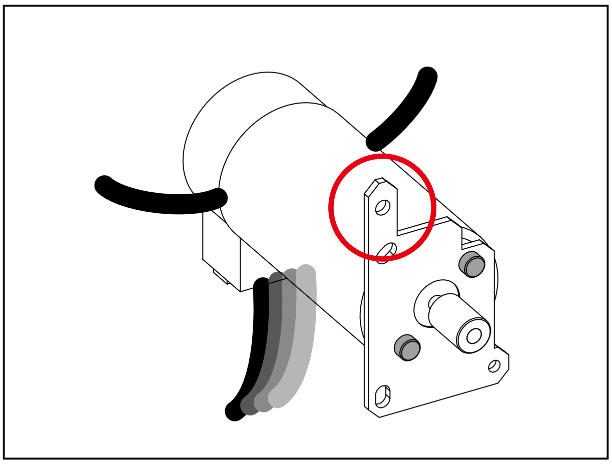


5 Remove the three screws attaching the Flange, and remove the motor together with the Flange.

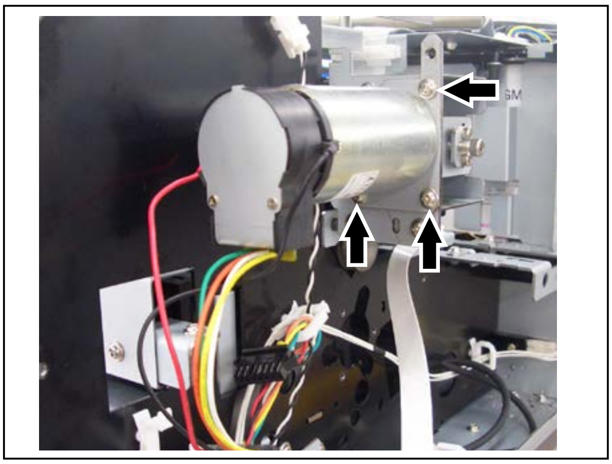


6 Remove the three screws shown in the figure to remove the motor from the Flange.
And attach a new motor to the Flange.

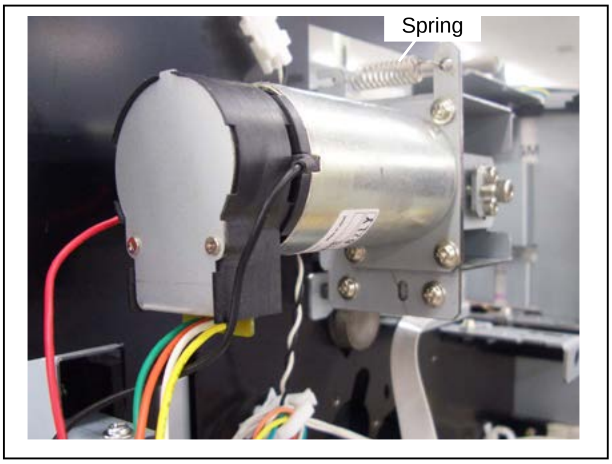
Be careful with the attaching direction of the Flange in relation to the motor cables.



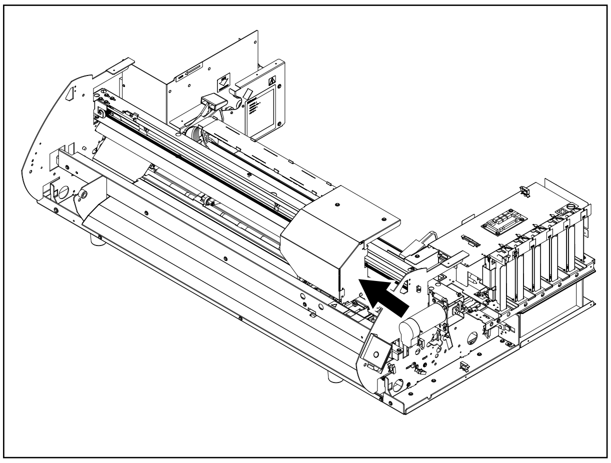
7 Attach the Flange with the three screws temporarily.



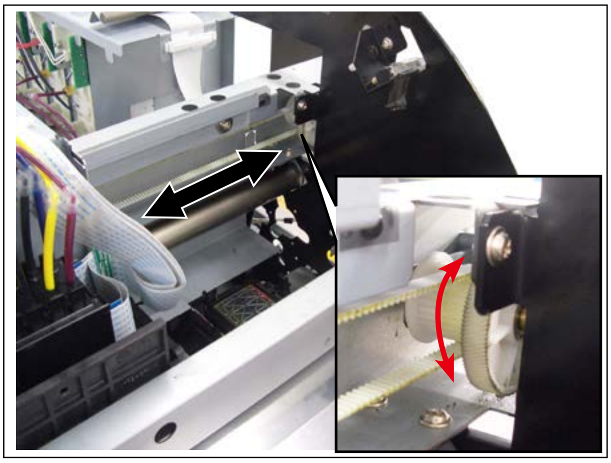
8 Attach the spring.



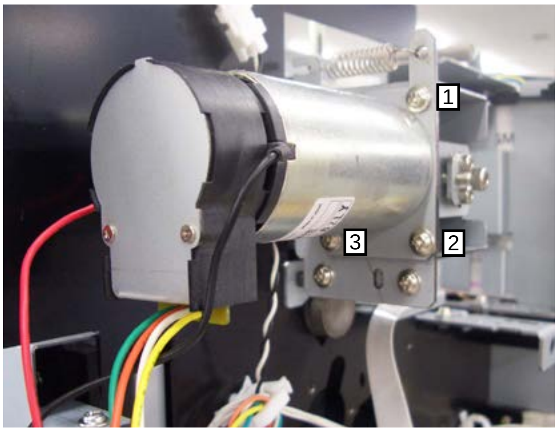
9 Move the Head Carriage on the Bed.



10 Move the Head Carriage by hand to check if the gears mesh together.

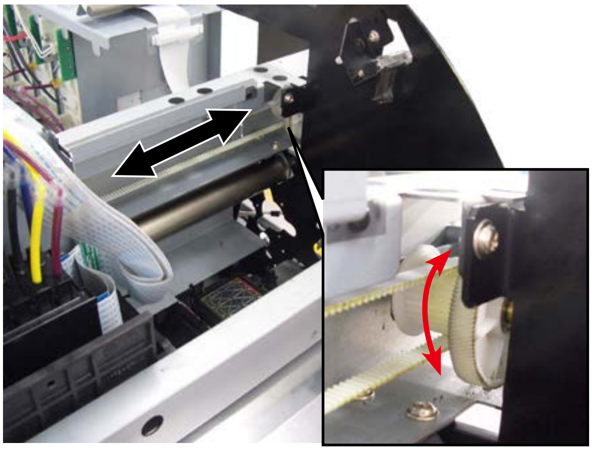


11 Tighten up the three screws to attach the Flange in the order shown in the figure.

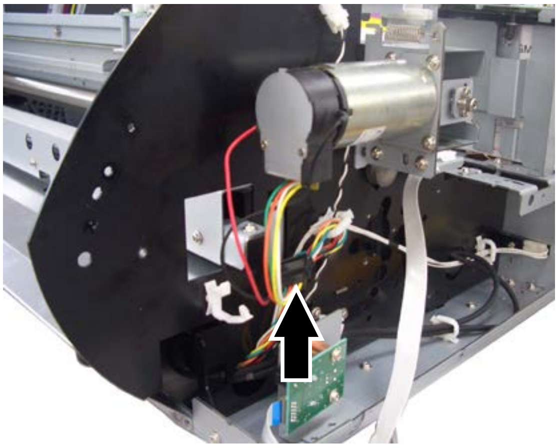


12 Move the Head Carriage by hand for short steps back and forth to check if there is no backlash all the way around.

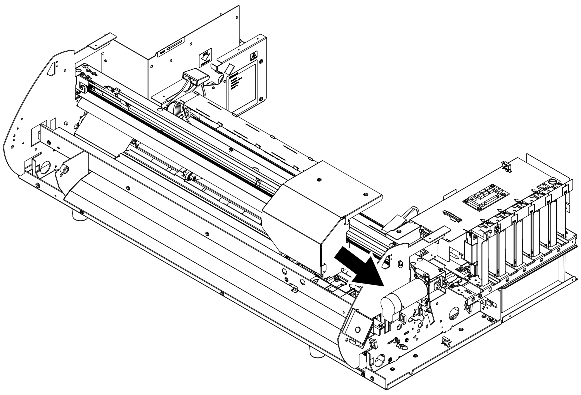
Apply a proper quantity of grease (FLOIL G902 10ML_02) to gears of the motor and Drive Gear.



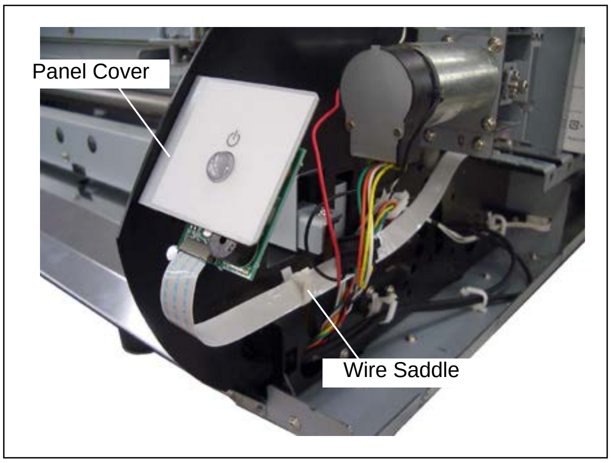
13 Connect the connector of the Motor Cable.



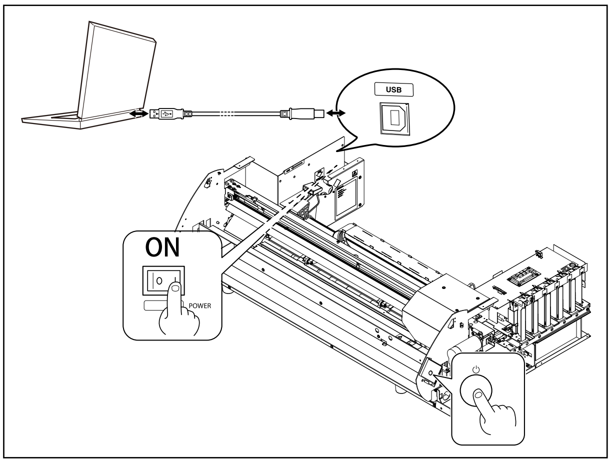
14 Move the Head Carriage to the capping position.



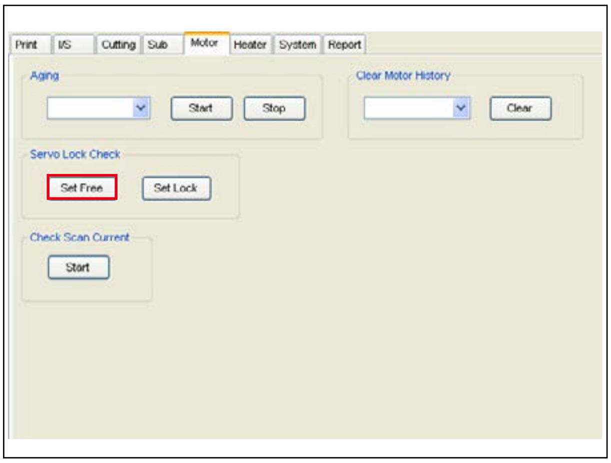
15 Attach the Panel Cover and attach the ribbon cable with the Wire Saddle.


Panel Cover
Wire Saddle

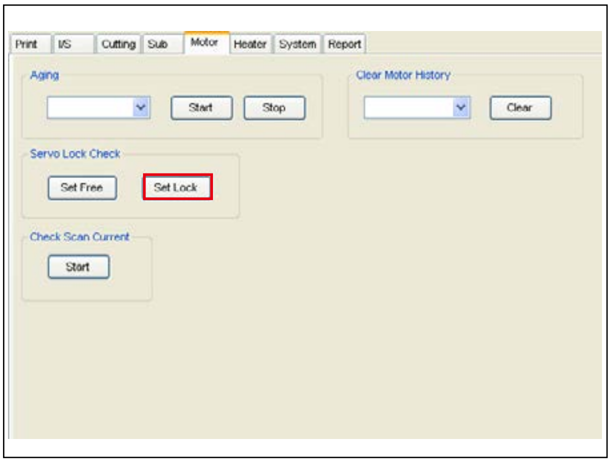
16 Check the Srevo Lock.
Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

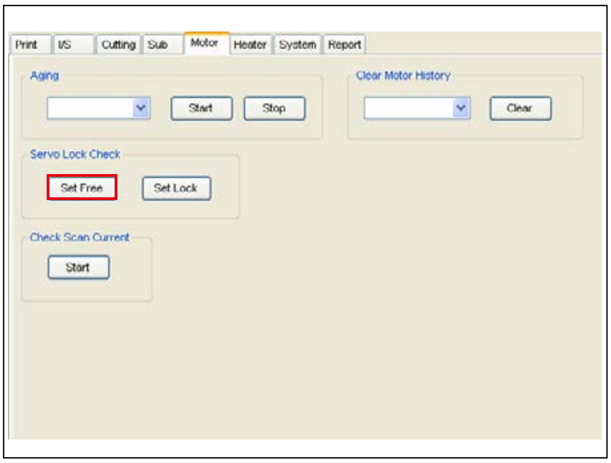
17 Start up the Service Application and click [Motor]>[Servo Lock Check]>[Set Free].
Then, move the Head Carriage on the Bed by hand.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

18 When you click [Motor]>[Servo Lock Check]>[Set Lock], the motor is excited. Then, check that the Head Carriage does not move by hand.

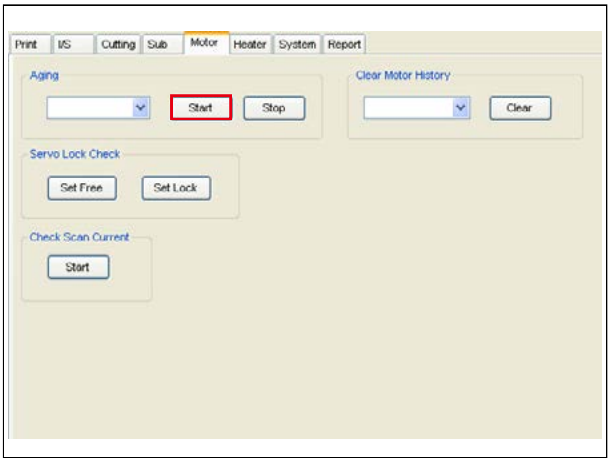

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

19 lick [Motor]>[Servo Lock Check]>[Set Free].
Then, move the Head Carriage to the capping position.

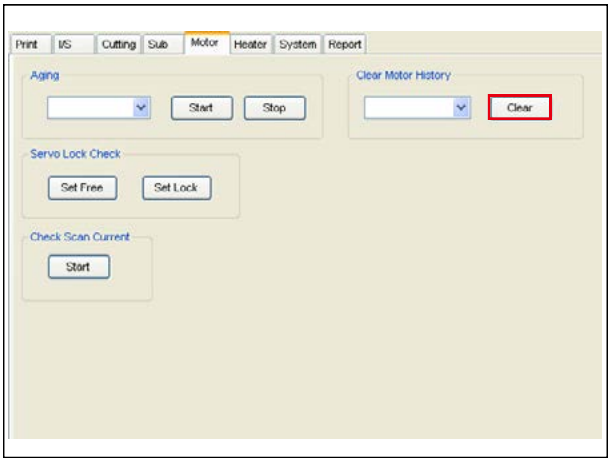

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

20 Perform Aging.
Click [Motor]>[Aging]>[Scan]>[Start]. Check the printer performs AGING correctly and then, finish it by clicking [Stop].

Do not load any media when performing [AGING].

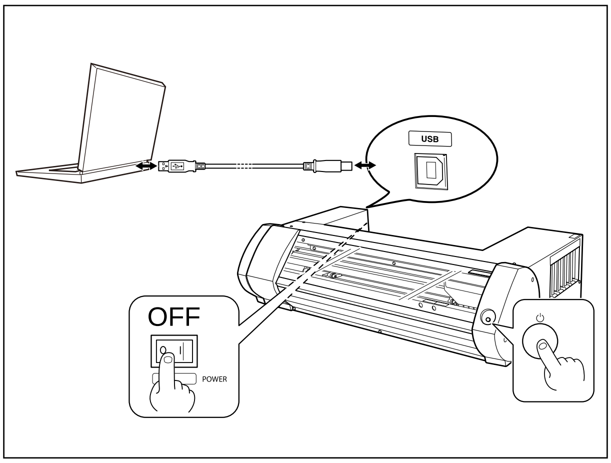

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

21 Clear the motor working hours.
Click [Clear Motor History]>[Scan]>[Clear]. The motor working hours will be reset to 0.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

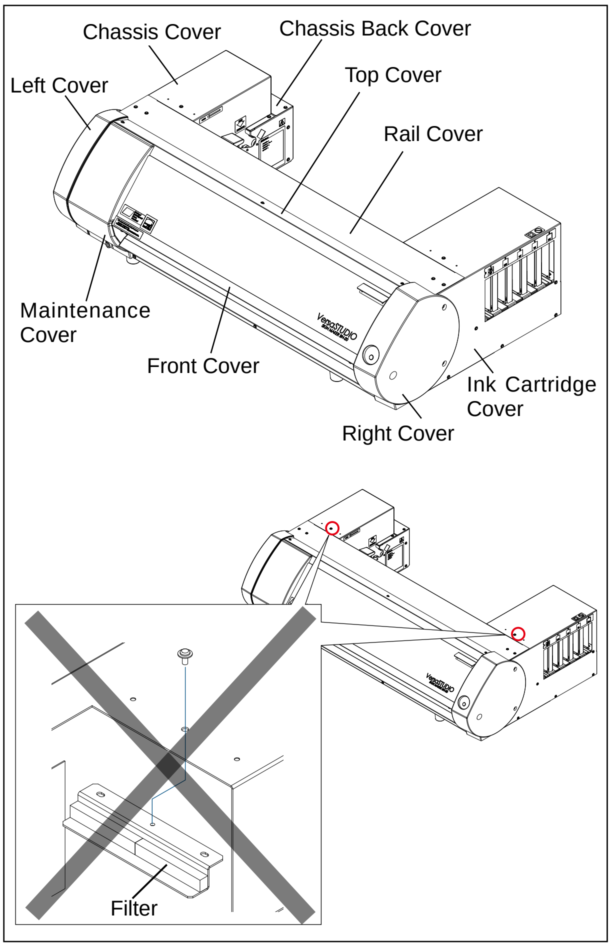
3-7 FEED MOTOR REPLACEMENT

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

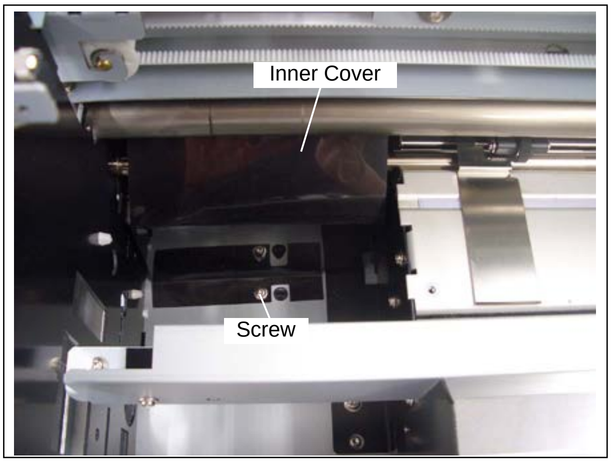
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

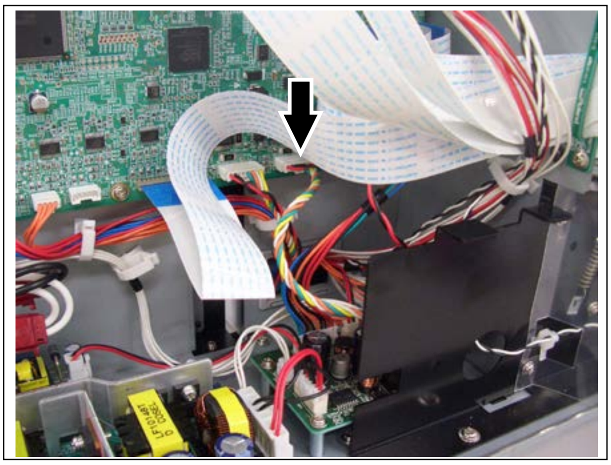

Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

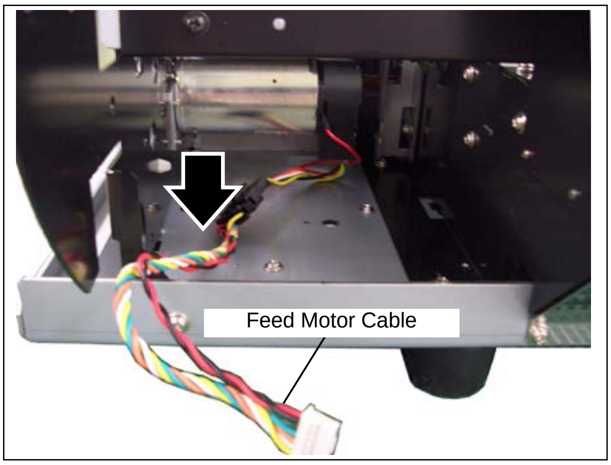
3 Remove the Inner Cover.


Inner Cover
Screw

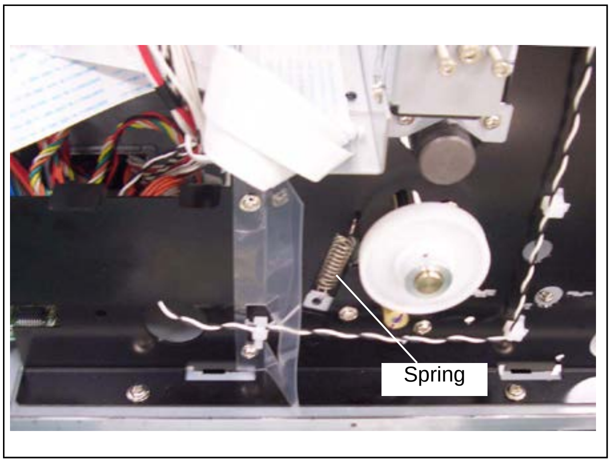
4 Remove the Feed Motor Cable shown in the figure from the Main Board.



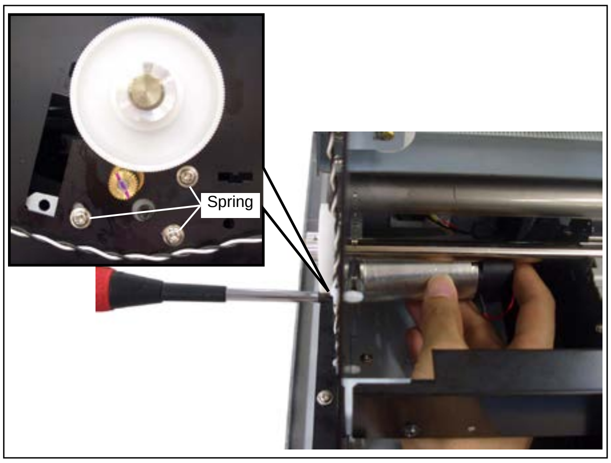
5 Pull out the Feed Motor Cable from the front of the printer.


Feed Motor Cable

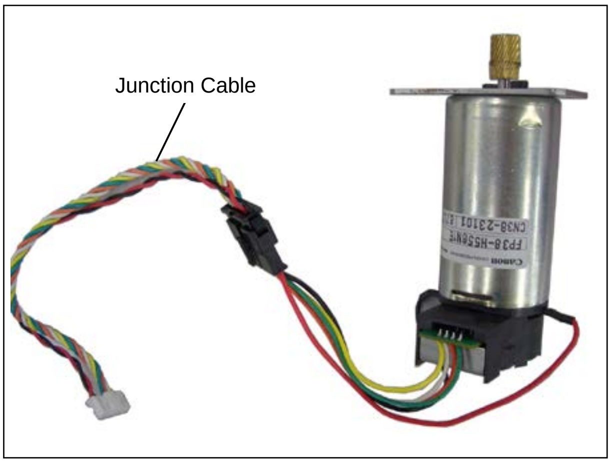
6 Remove the spring.



7 Remove the three screws attaching the Motor Flange and remove the Feed Motor.

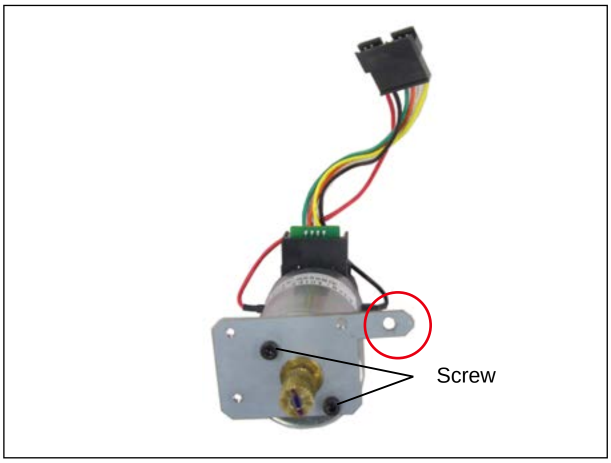


8 Remove the Feed Motor Cable from the connector of the junction cable. .

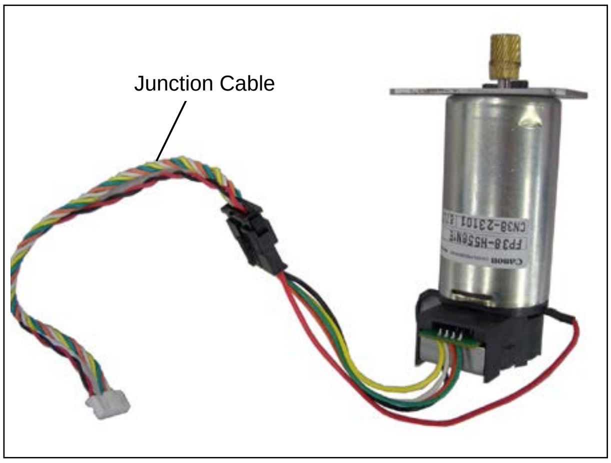

Junction Cable

9 Remove the two screws as shown in the figure to remove the motor from the Flange.
And attach a new motor to the Flange.

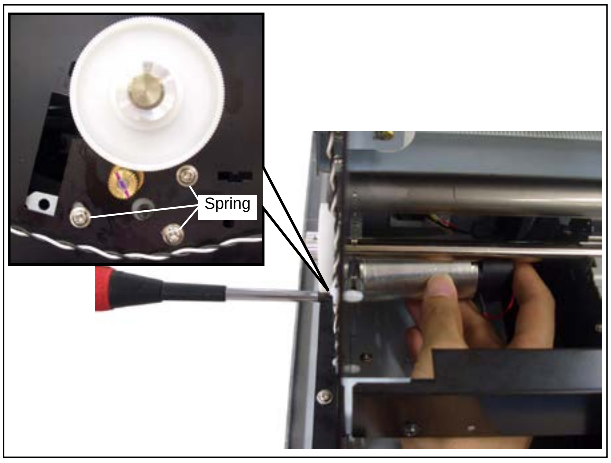
Be careful with the attaching direction of the Flange in relation to the motor cables.



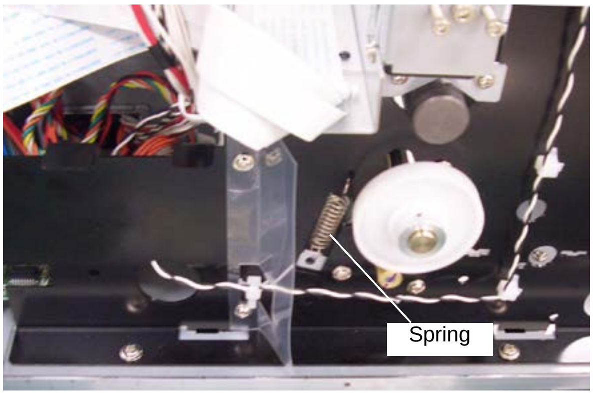
10 Connect the Feed Motor Cable to the junction cable.


Junction Cable

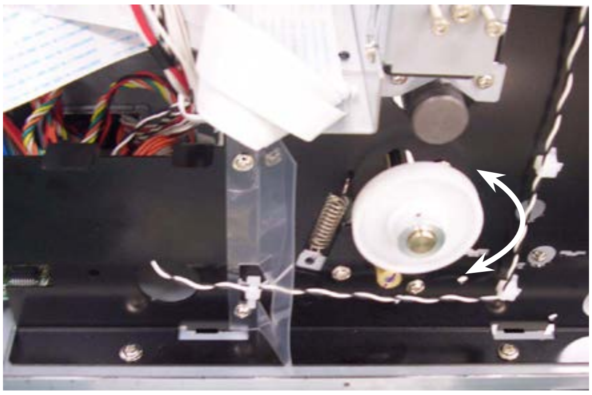
11 Attach the Flange with the three screws temporarily.



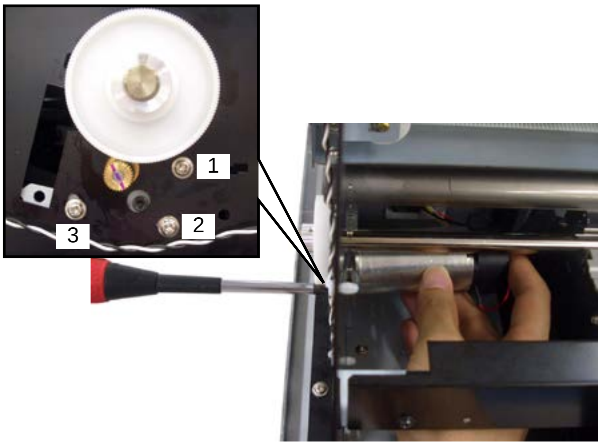
12 Attach the spring.



13 Turn the Drive Gear by hand to check if the gears mesh together.

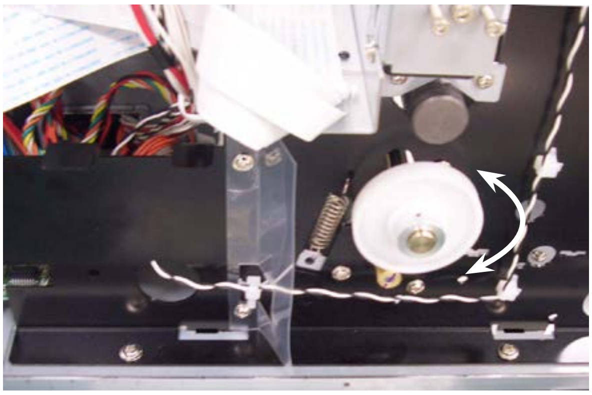


14 Tighten up the three screws to fix the Flange in the order shown in the figure.

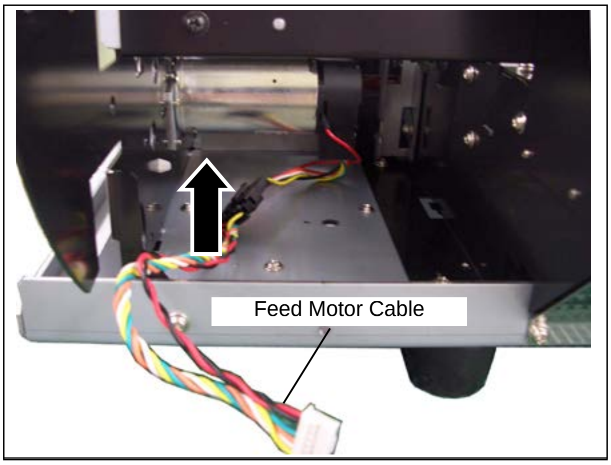


15 Turn the Drive Gear by hand for short steps back and forth to check if there is no backlash all the way around.

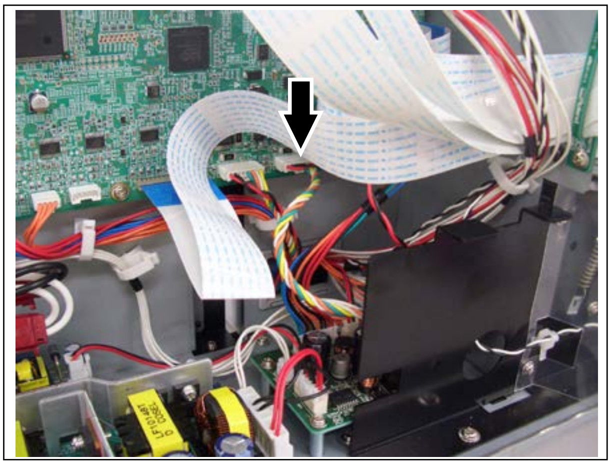
Apply a proper quantity of grease (FLOIL G902 10ML_02) to gears of the motor and Drive Gear.



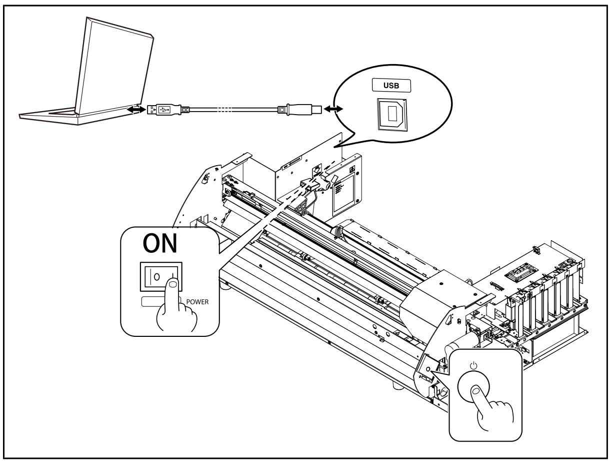
16 Pass the Feed Motor Cable to the Main Board side.


Feed Motor Cable

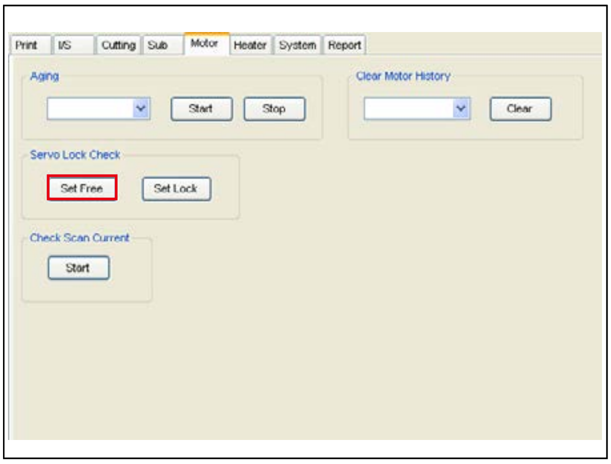
17 Connect the Feed Motor Cablr to the Main Board.



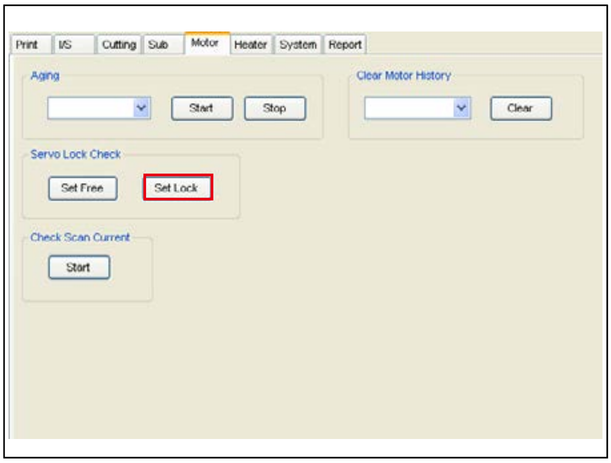
18 Check the Srevo Lock.
Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.


USB
ON
POWER

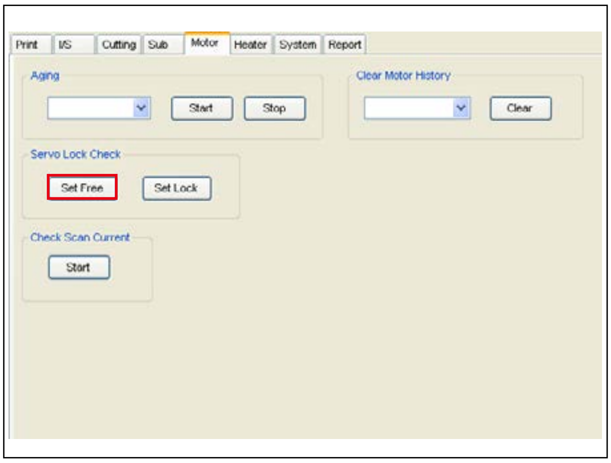
19 Start up the Service Application and click [Motor]>[Servo Lock Check]>[Set Free].
Then, move the Head Carriage on the Bed by hand.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

20 When you click [Motor]>[Servo Lock Check]>[Set Lock], the motor is excited. Then, check that the Grit Rollers do not move by hand.

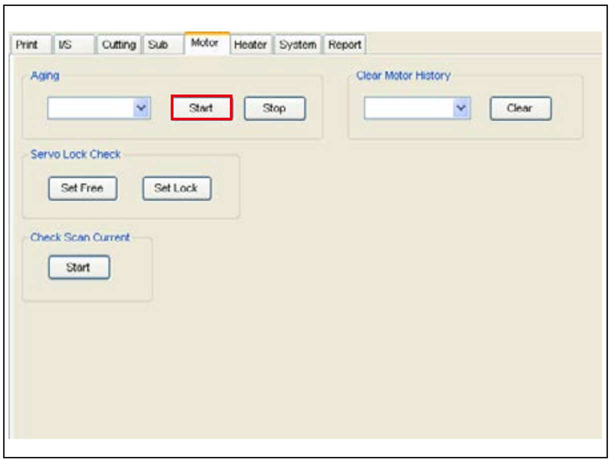

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

21 lick [Motor]>[Servo Lock Check]>[Set Free].

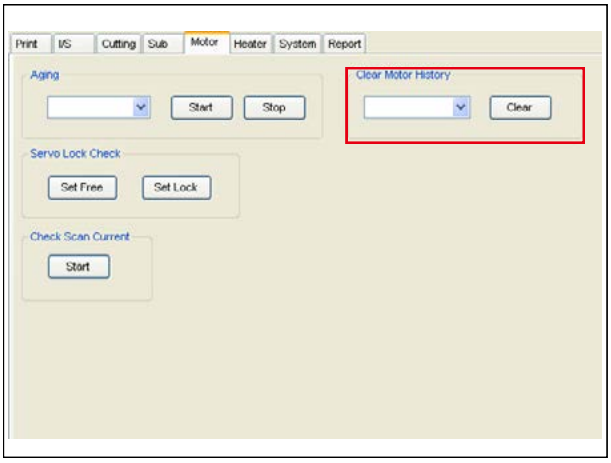

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

22 Perform Aging.
Click [Motor]>[Aging]>[Feed]>[Start]. Check the printer performs AGING correctly and then, finish it by clicking [Stop].

Do not load any media when performing [AGING].

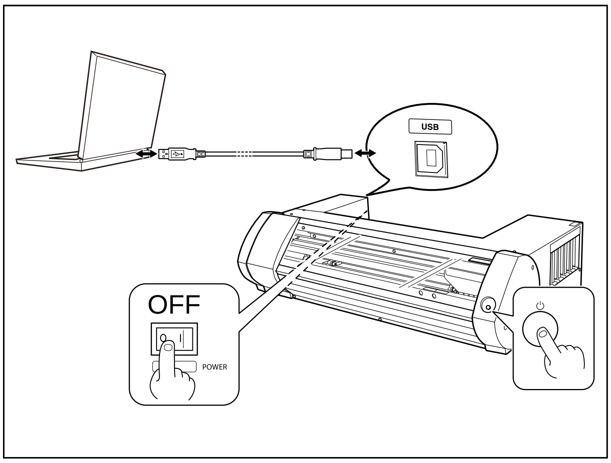

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

23 Clear the motor working hours.
Click [Motor]>[Clear Motor History]>[Feed]>[Clear]. The motor working hours will be reset to 0.

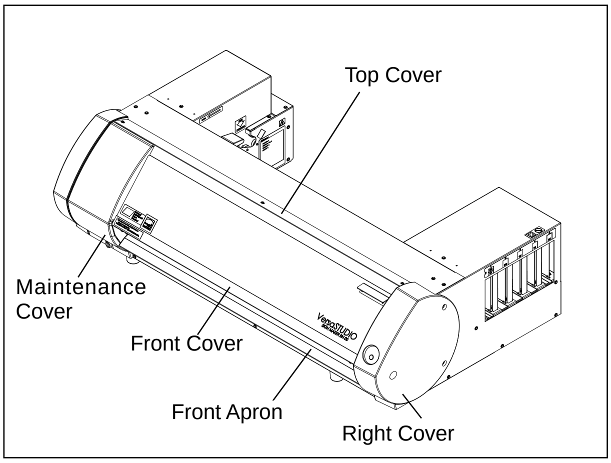

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

3-8 WIPER SCRAPER REPLACEMENT

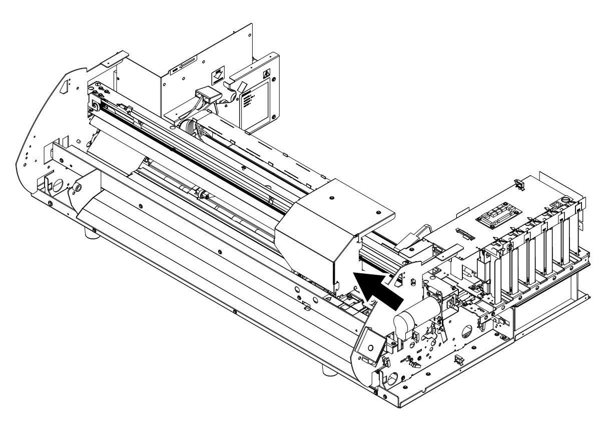
1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

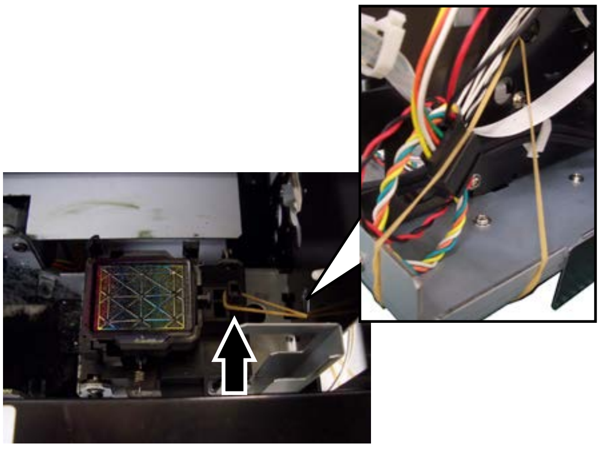
2 Remove Right Cover, Maintenance Cover, Top Cover, Front Cover and Front Apron.


Top Cover
Maintenance Cover
Front Cover
Front Apron
Right Cover

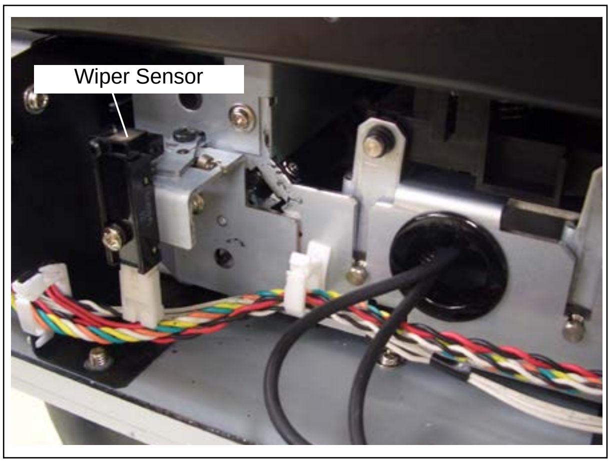
3 Move the Head Carriage on the Bed.



4 To make the Capping Unit capped with the Head, hook the tip of the part shown in the figure to the Frame.
Any tool is OK to hook the Capping Unit.

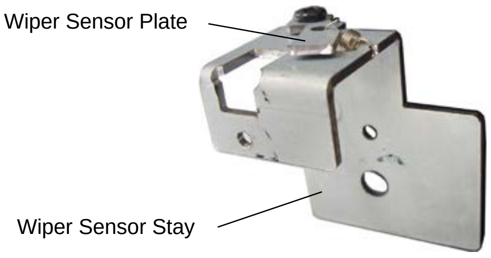


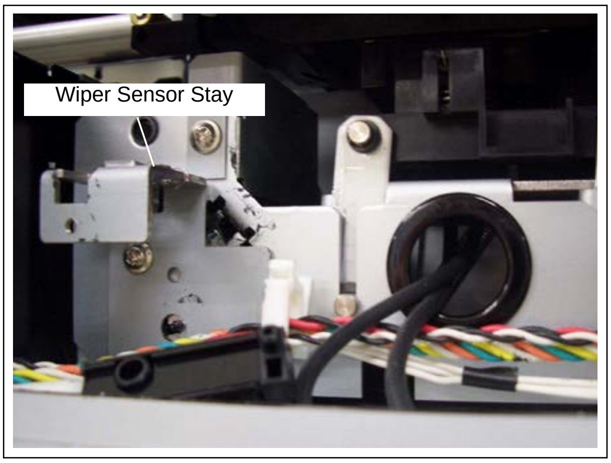
5 Remove the Wiper Sensor.


Wiper Sensor

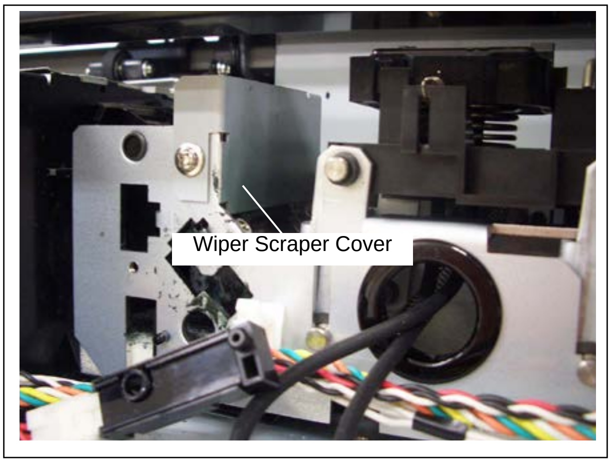
6 Remove the Wiper Sensor Stay with the Spring and the Plate.

<Wiper Sensor Stay>


Wiper Sensor Plate
Wiper Sensor Stay

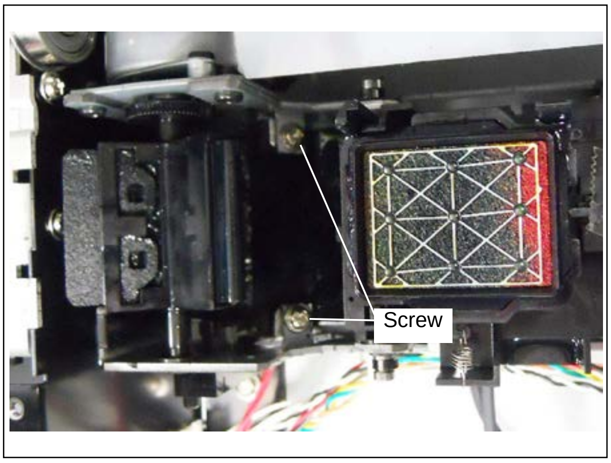

Wiper Sensor Stay

7 Remove the Wiper Scraper Cover

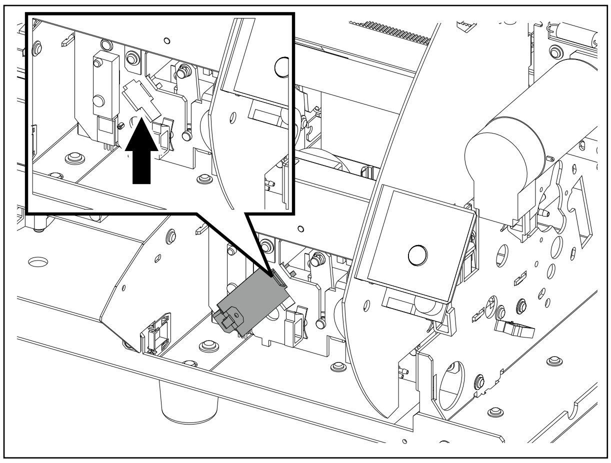

Wiper Scraper Cover

8 Remove the screws which attach the Wiper Scraper Frame.

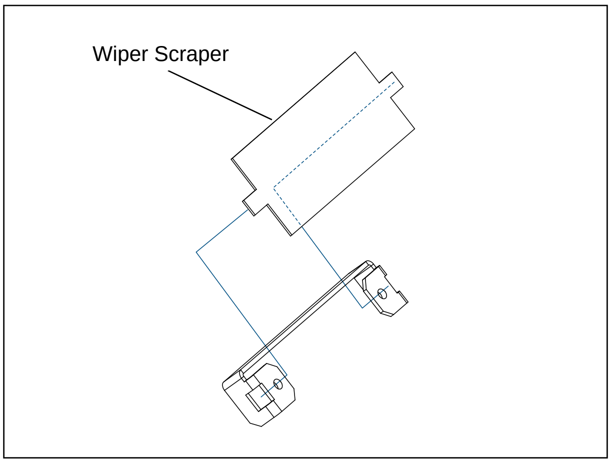
Use a hexagonal key whose across-flats is 2.5mm.



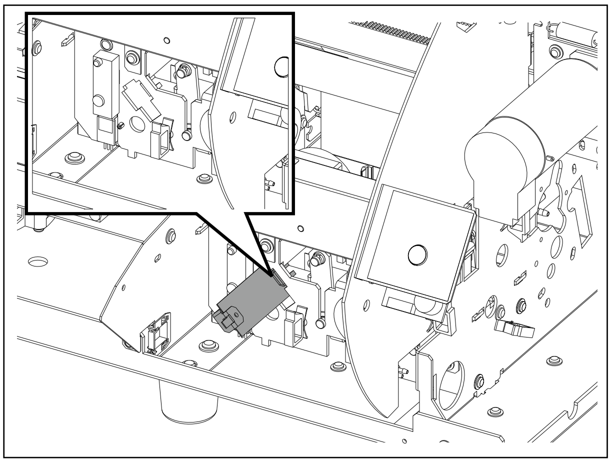
9 Take out the Wiper Scraper Frame and the Wiper Scraper by the tweezers from the hole shown in the figure.



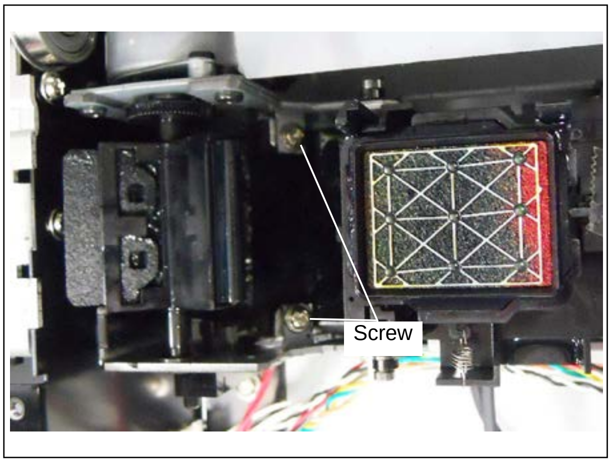
10 Replace the Wiper Scraper with the new one.
There is no direction of the Wiper Scraper.



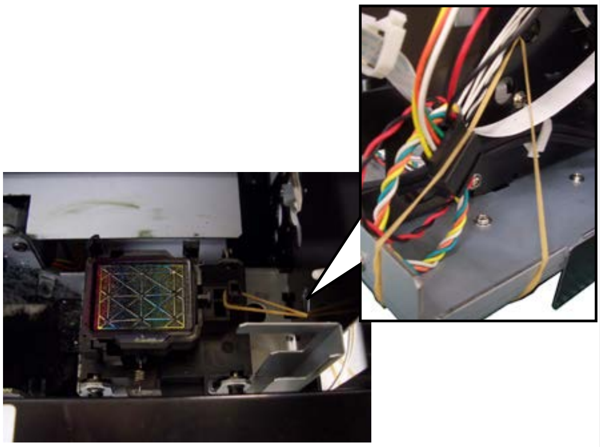
11 Attach the Wiper Scraper Frame and the Wiper Scraper by the tweezers from the hole shown in the figure.



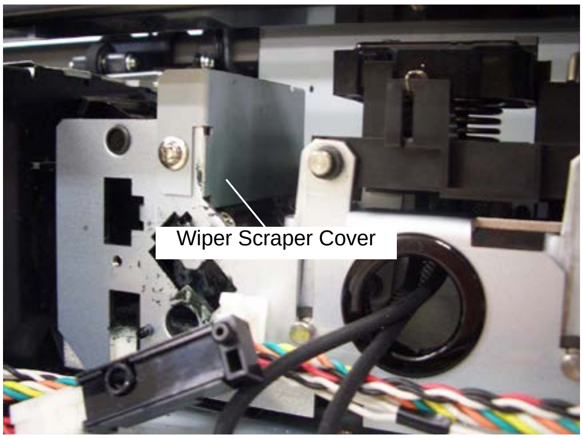
12 Tighten up the screws for attaching the Wiper Scraper Frame .



13 Release the Cap Top.

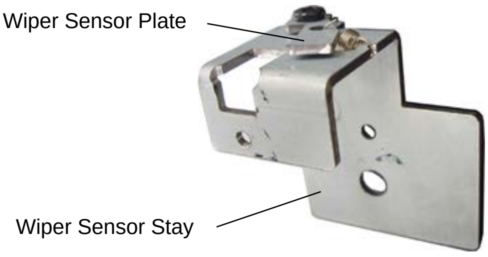


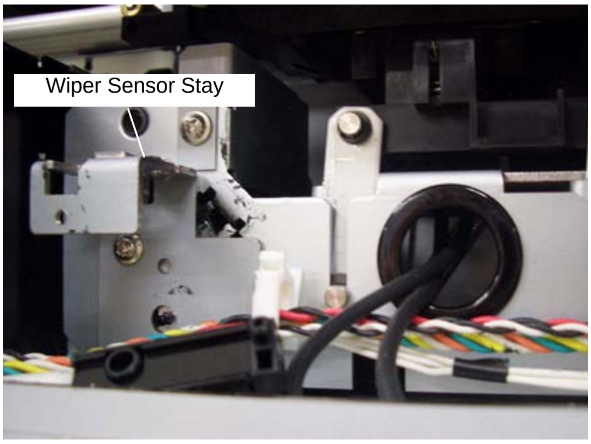
14 Attach the Wiper Scraper Cover


Wiper Scraper Cover

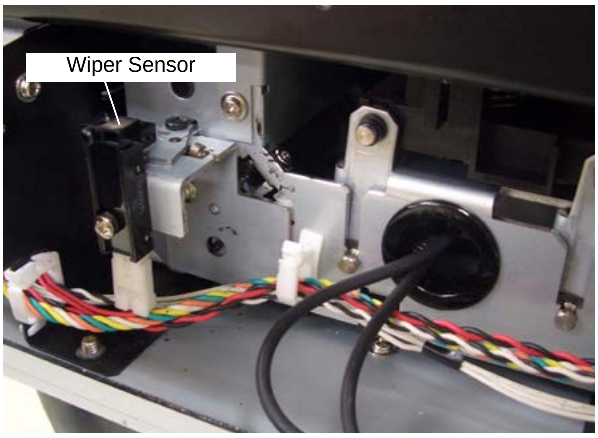
15 Attach the Wiper Sensor Stay with the Spring and the Plate.

<Wiper Sensor Stay>

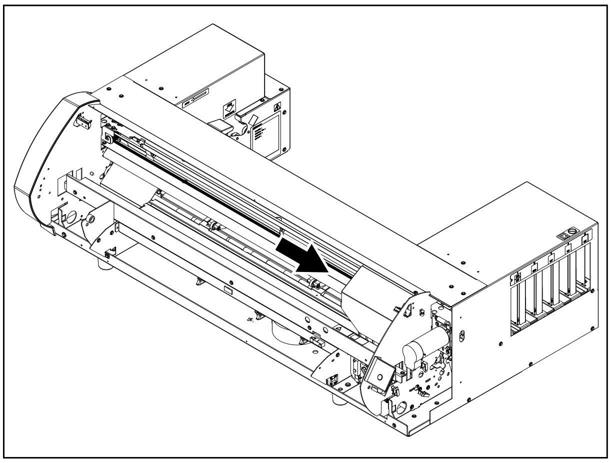

Wiper Sensor Plate
Wiper Sensor Stay


Wiper Sensor Stay

16 Attach the Wiper Sensor.

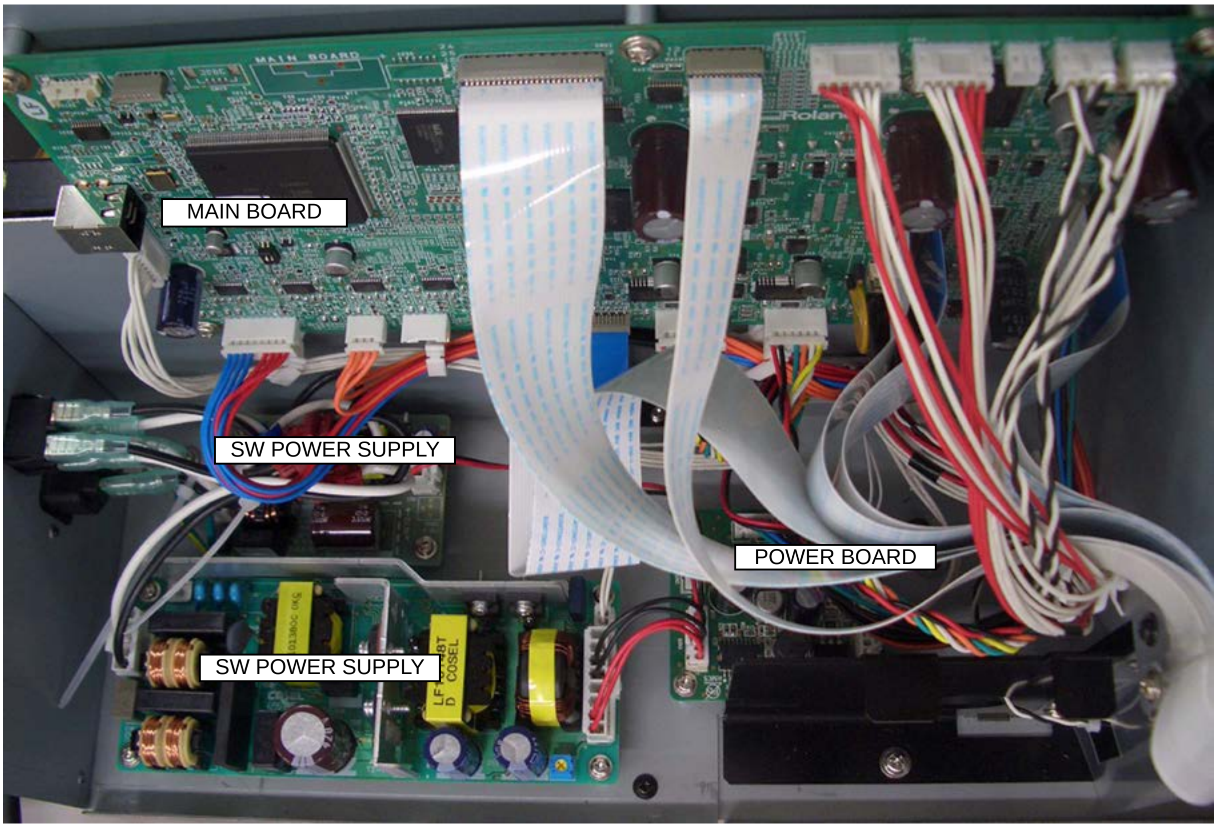

Wiper Sensor

12 Move the Head Carriage to the capping position.



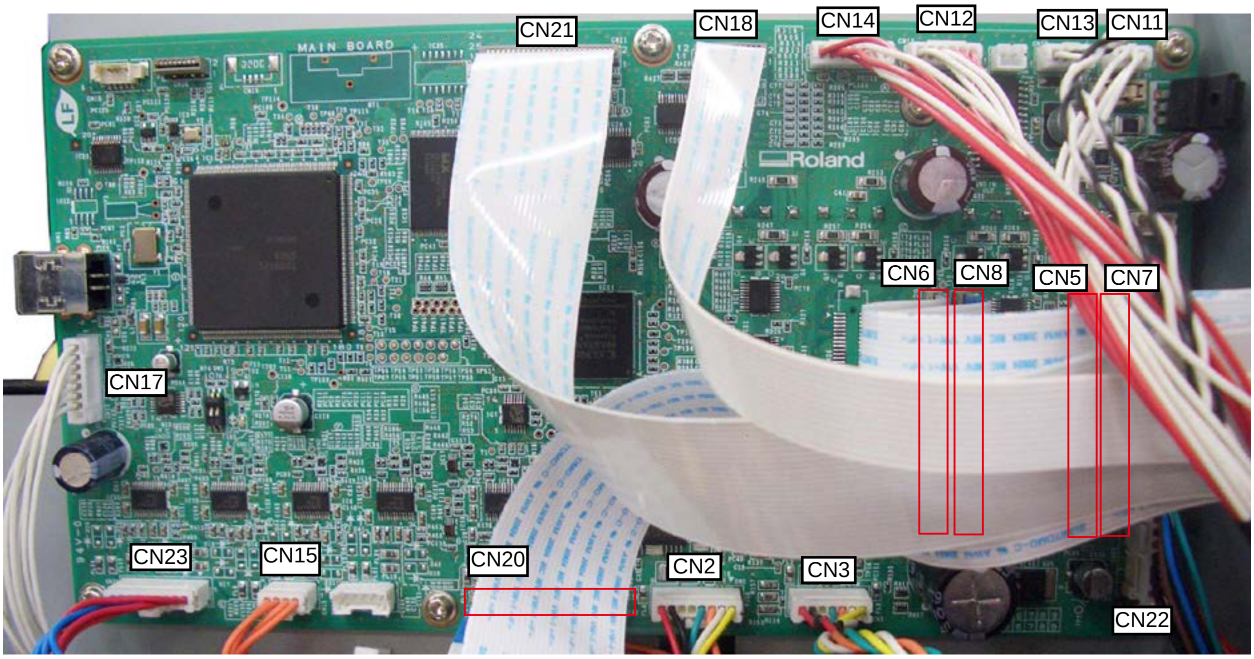
3-9 BOARDS REPLACEMENT (MAIN BOARD / SW POWER SUPPLY) ⚠22 ⚠23 ⚠24 ⚠25

BOARD LAYOUT (IN CHASSIS)

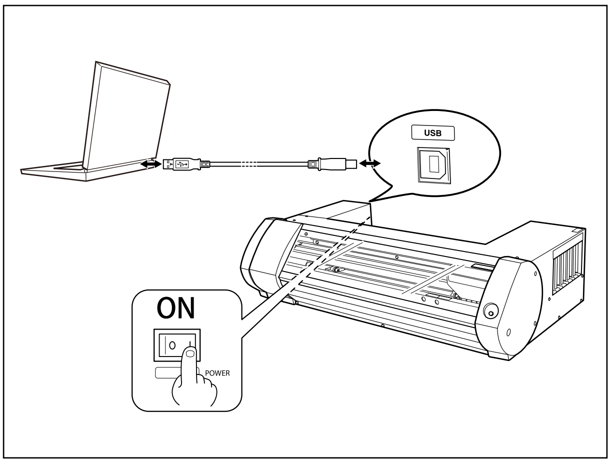

MAIN BOARD
SW POWER SUPPLY
POWER BOARD
SW POWER SUPPLY

MAIN BOARD REPLACEMENT

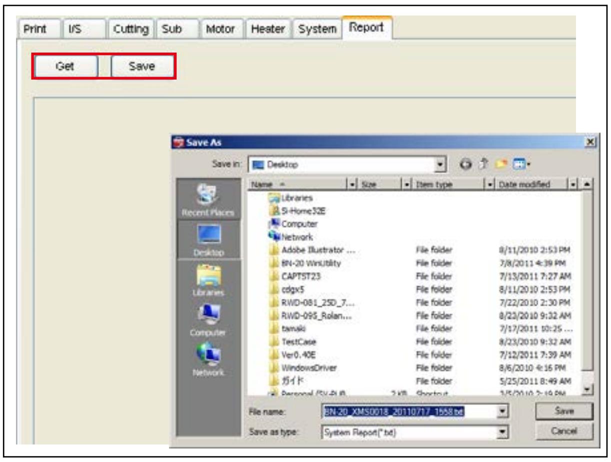
MAIN BOARD CONNECTOR LAYOUT


CN21
CN18
CN14
CN12
CN13
CN11
CN6
CN8
CN5
CN7
CN17
CN23
CN15
CN20
CN2
CN3
CN22

1 Connect the USB cable and turn on the Main Power SW.


USB
ON
POWER

2 Start up the Service Application.
Click [Report]>[Get] and then, click [Save] to save the System Report.

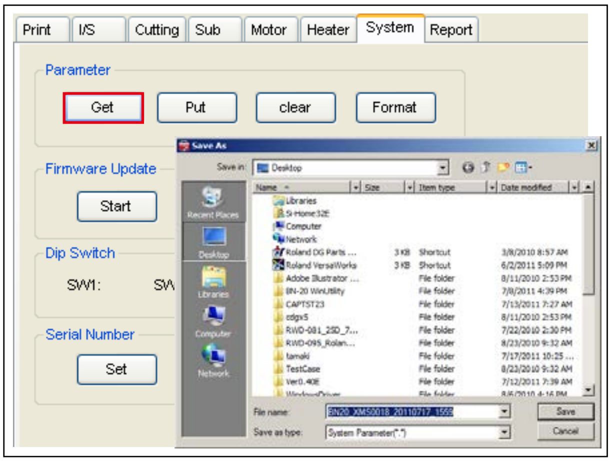

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Get
Save
Save As
Recent Places
Desktop
Libraries
Computer
Network
Save
Cancel

Save in: Desktop

Name	Size	Item type	Date modified
Libraries			
Si-Home32E			
Computer			
Network			
Adobe Illustrator ...		File folder	8/11/2010 2:53 PM
BN-20 WinUtility		File folder	7/8/2011 4:39 PM
CAPTST23		File folder	7/13/2011 7:27 AM
cdgx5		File folder	8/11/2010 2:53 PM
RWD-081_25D_7...		File folder	7/22/2010 2:30 PM
RWD-095_Rolan...		File folder	8/23/2010 9:32 AM
tamaki		File folder	7/17/2011 10:25 ...
TestCase		File folder	8/23/2010 9:32 AM
Ver0.40E		File folder	7/12/2011 7:39 AM
WindowsDriver		File folder	8/6/2010 4:16 PM
ガイド		File folder	5/25/2011 8:49 AM

File name: BN-20_XMS0018_20110717_1558.txt
Save as type: System Report(*.txt)

3 Click [System]>[Get] to save the System Parameter.

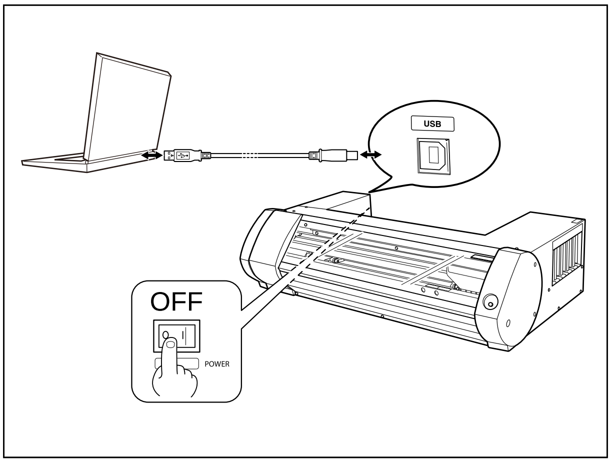

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Parameter
Get
Put
clear
Format
Firmware Update
Start
Dip Switch
SW1:
SW
Serial Number
Set
Save As
Recent Places
Desktop
Libraries
Computer
Network
Save
Cancel

Save in: Desktop

Name	Size	Item type	Date modified
Libraries			
Si-Home32E			
Computer			
Network			
Roland DG Parts ...	3 KB	Shortcut	3/8/2010 8:57 AM
Roland VersaWorks	3 KB	Shortcut	6/2/2011 5:09 PM
Adobe Illustrator ...		File folder	8/11/2010 2:53 PM
BN-20 WinUtility		File folder	7/8/2011 4:39 PM
CAPTST23		File folder	7/13/2011 7:27 AM
cdgx5		File folder	8/11/2010 2:53 PM
RWD-081_25D_7...		File folder	7/22/2010 2:30 PM
RWD-095_Rolan...		File folder	8/23/2010 9:32 AM
tamaki		File folder	7/17/2011 10:25 ...
TestCase		File folder	8/23/2010 9:32 AM
Ver0.40E		File folder	7/12/2011 7:39 AM

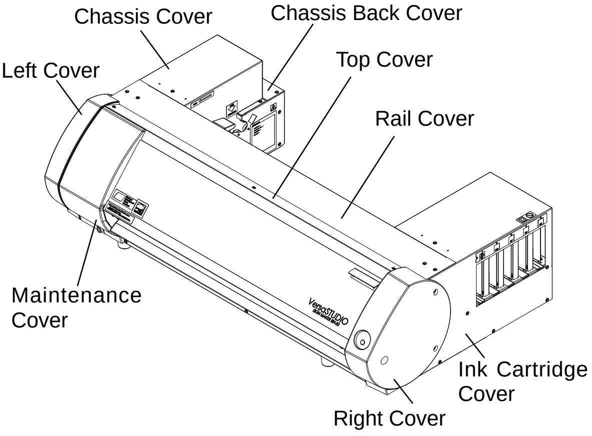
File name: BN20_XMS0018_20110717_1555
Save as type: System Parameter(*.*)

4 Turn off the Main Power SW and disconnect the USB cable.

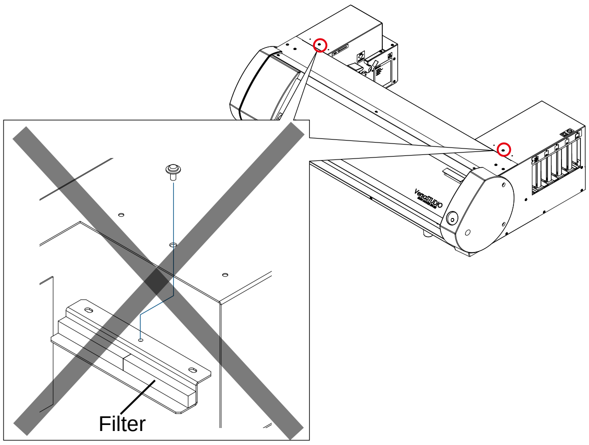

USB
OFF
POWER

5 Remove the following covers in order.

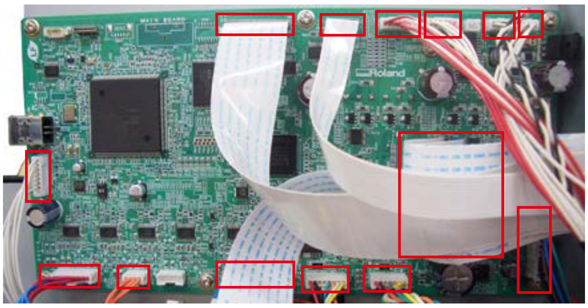
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Top Cover
5. Chassis Back Cover
6. Chassis Cover
7. Ink Cartridge Cover
8. Rail Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Ink Cartridge Cover
Right Cover

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

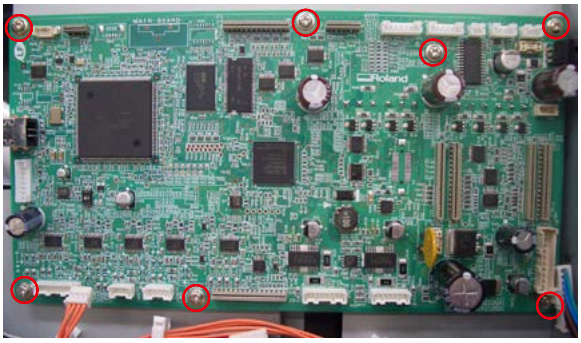


6 Disconnect all the cables from the Main Board.

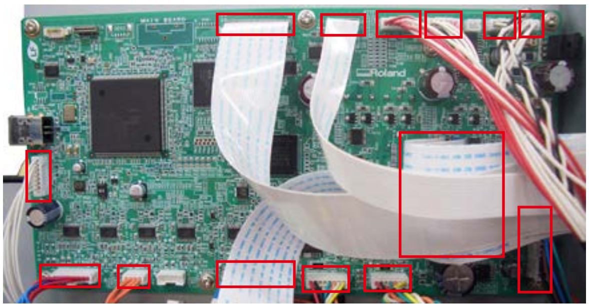


Revised 12

7 Remove the seven screws shown in the figure to replace the Main Board with the new one.



8 Connect all the cables which are disconnected at step 6 to the Main Board.



Revised 6

9 Perform the following operations after replacement.

1. Firmware upgrade

   Refer to [4-2 HOW TO UPGRADE/INSTALL FIRMWARE].
2. Turn off the main power switch and change DIP SW setting

   BN-20/BN-20D (1: OFF, 2: OFF)
   BN-20A (1: OFF, 2: ON)
3. Serial number setting

   Service Application [System]>[Serial]
4. System parameter deletion

   Service Application [System]>[Parameter]>[Clear]
5. System parameter initial setting

   Service Application [System]>[Parameter]>[Format]
6. Put parameter

   Service Application [System]>[Parameter]>[Put]
7. Sensor check

   Service Application [Sub]>[Sensor Check]>[Start]

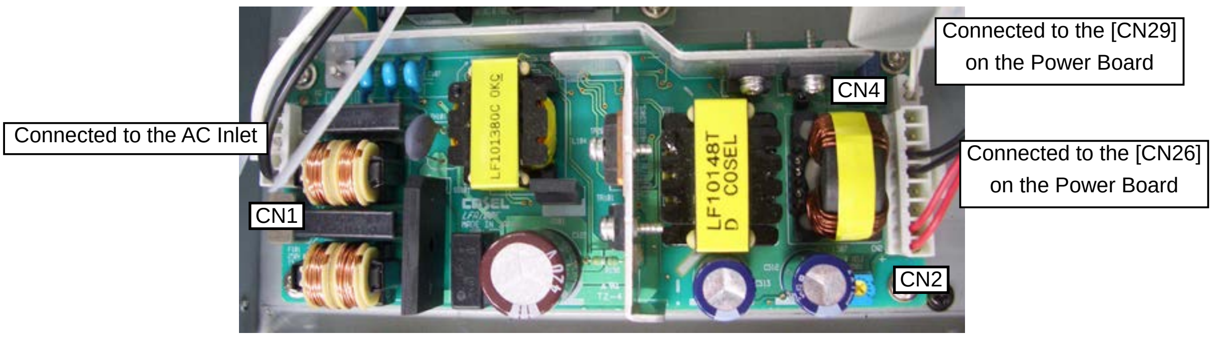
Revised 6

10 Perform the following operations if it is not possible to transfer the parameters.

1. Firmware upgrade
   Refer to [4-2 HOW TO UPGRADE/INSTALL FIRMWARE].
2. Turn off the main power switch and change DIP SW setting
   BN-20/BN-20D (1: OFF, 2: OFF)
   BN-20A (1: OFF, 2: ON)
3. Serial number setting
   Service Application [System]>[Serial]
4. System parameter deletion
   Service Application [System]>[Parameter]>[Clear]
5. System parameter initial setting
   Service Application [System]>[Parameter]>[Format]
6. Head rank setting
   Service Application [Print]>[Head Rank]
7. Ink type setting
   Service Application [I/S]>[Ink Type]
8. Sensor check
   Service Application [Sub]>[Sensor Check]>[Start]
9. Linear encoder setup
   Refer to [4-4 LINEAR ENCODER SETUP].
10. Head alignment
    Refer to [4-3 HEAD ALIGNMENT].
    Only Bidirectional Adjustment is required.
11. Tool pressure adjustment
    Refer to [4-8 TOOL PRESSURE ADJUSTMENT]
12. Calibration
    Refer to [4-7 CALIBRATION].
13. Crop-cut adjustment
    Refer to [4-5 CROP-CUT ADJUSTMENT].
14. Print/Cut position adjustment
    Refer to [4-6 PRINT/CUT POSITION ADJUSTMENT].

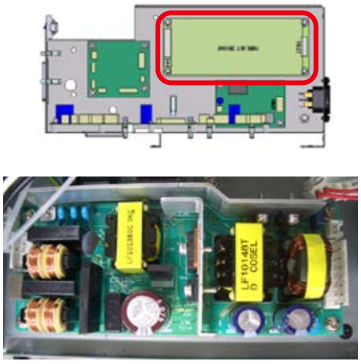
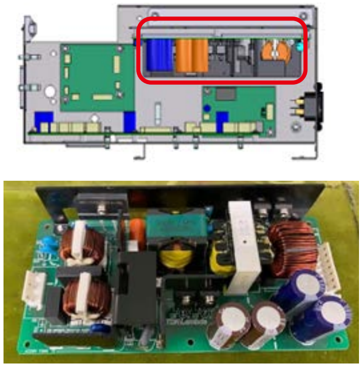
SW POWER SUPPLY REPLACEMENT (41V)

SW POWER SUPPLY CONNECTOR LAYOUT

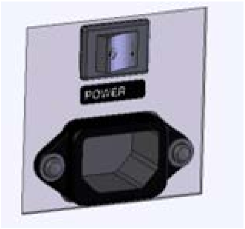
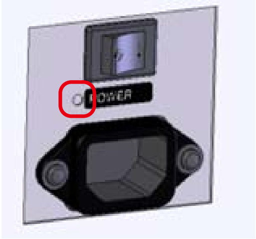

Connected to the [CN29] on the Power Board
CN4
Connected to the AC Inlet
Connected to the [CN26] on the Power Board
CN1
CN2

For the power board of BN-20: Serial No. AFL9772 or later, BN-20A: Serial No. ZFK3732/BN-20D: All serial No.

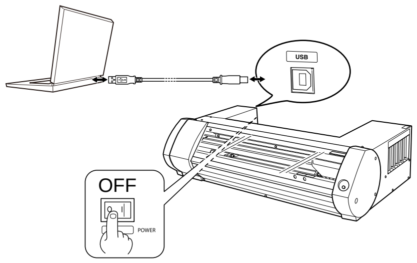
There are two types of power boards and they are not interchangeable. Please note that the chassis plate, stays, and connection cable parts are different.

Current parts	New parts
 1000012802 POWER UNIT,LFA100F-48-HJ1R2YD41_01	 1000010044 POWER UNIT,ZWS240BP-48/R (41)

The current and new parts can be identified whether there is the pin for distinguishing power board or not next to the power switch. They cannot be distinguished by serial numbers.

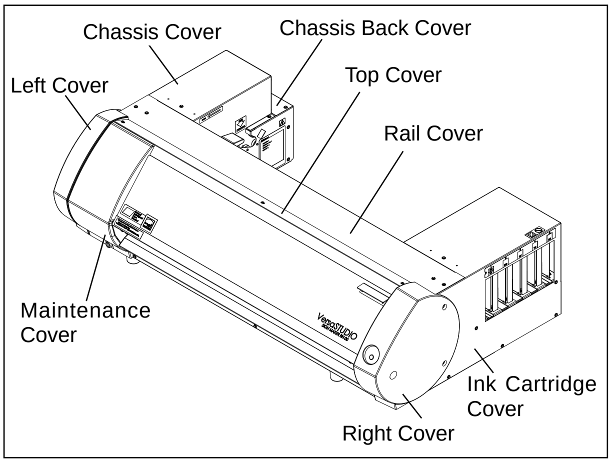
Current parts	New parts
 No pin for distinguishing power board	 There is the pin for distinguishing power board.

1 Turn off the Main Power SW and disconnect the USB cable.

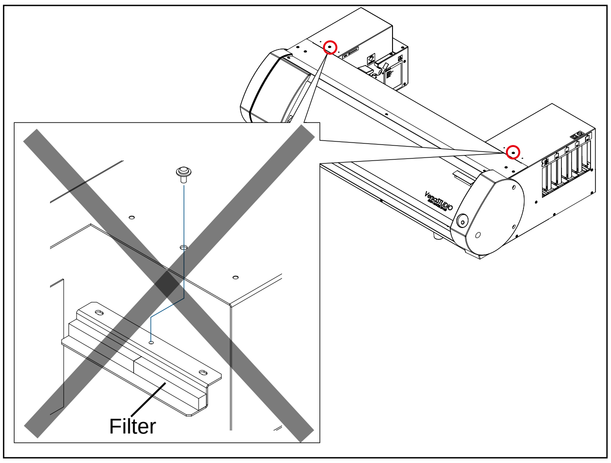

USB
OFF
POWER

2 Remove the following covers in order.

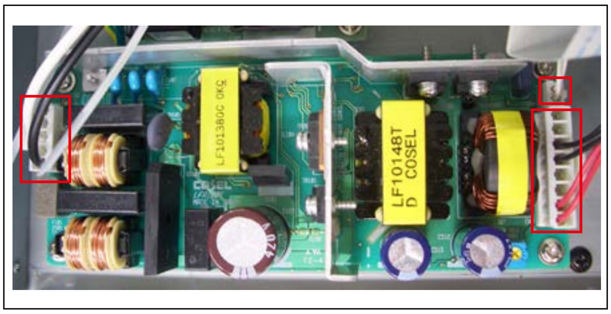
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Top Cover
5. Chassis Back Cover
6. Chassis Cover
7. Rail Cover
8. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Ink Cartridge Cover
Right Cover

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

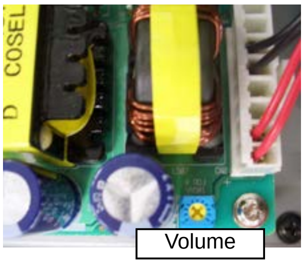


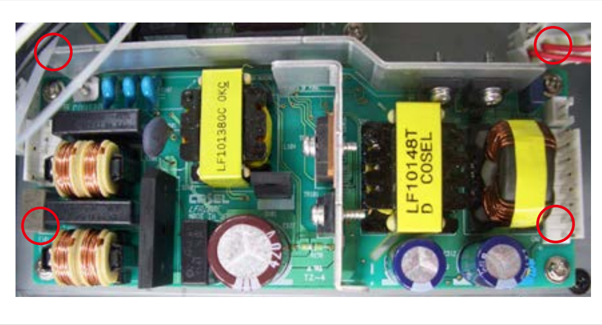
3 Disconnect all the cable from the SW Power Supply.



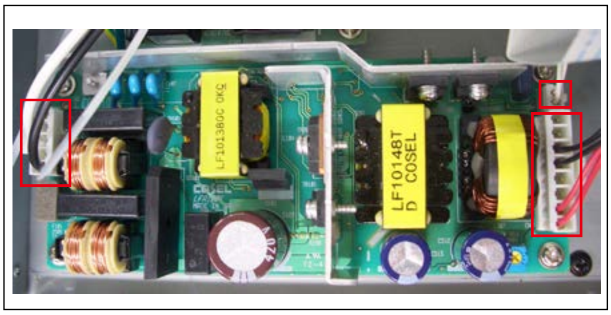
4 Remove the four screws shown in the figure and replace with the new SW Power Supply.
Connect all the cables to the SW Power Supply.

In case that the volume is accidentally turned around, adjust the output voltage value to +41 +/- 0.1.



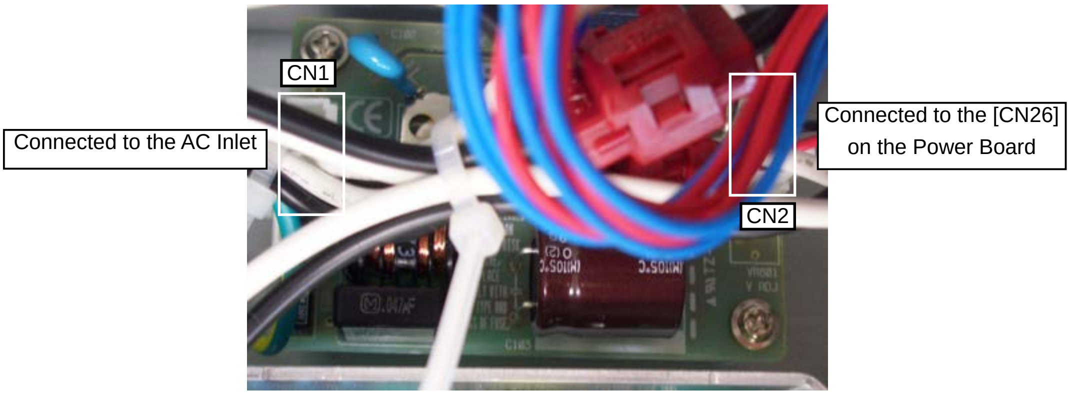


5 Connect all the cable to the SW Power Supply.

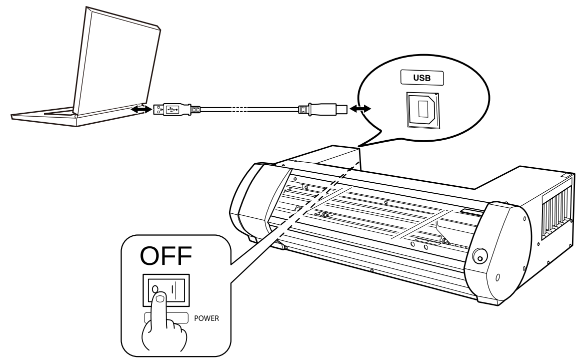


SW POWER SUPPLY REPLACEMENT (5-10V)

SW POWER SUPPLY CONNECTOR LAYOUT

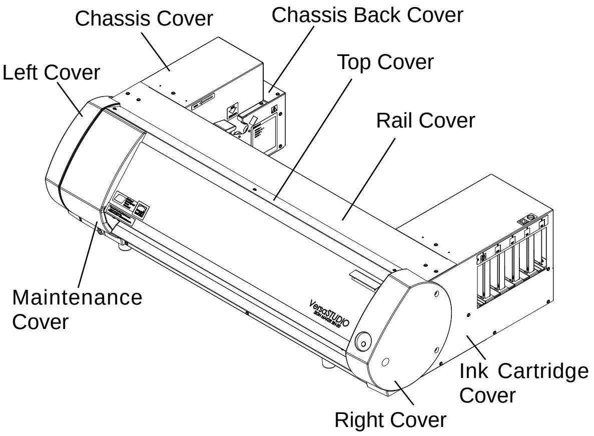

CN1
Connected to the AC Inlet
CN2
Connected to the [CN26] on the Power Board

1 Turn off the Main Power SW and disconnect the USB cable.

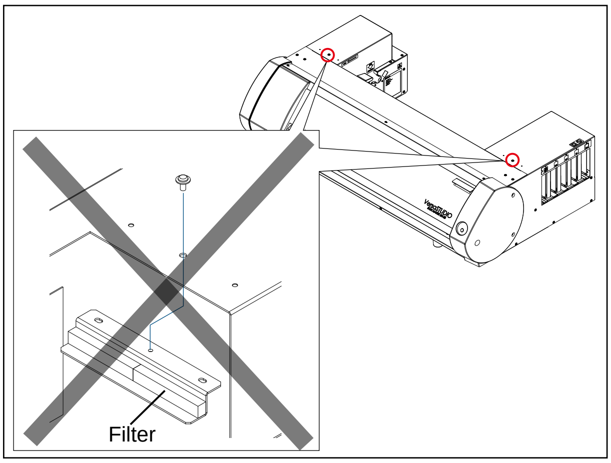

USB
OFF
POWER

2 Remove the following covers in order.

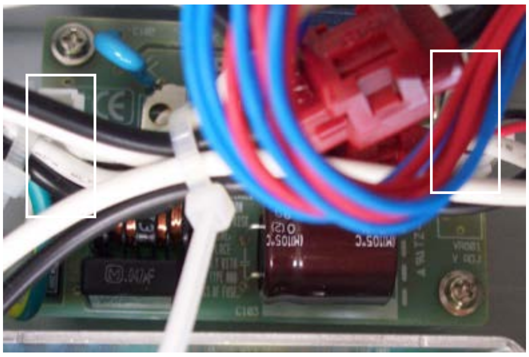
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Top Cover
5. Chassis Back Cover
6. Chassis Cover
7. Rail Cover
8. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Ink Cartridge Cover
Right Cover

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

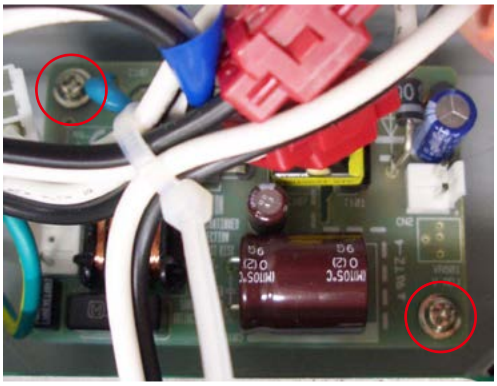


3 Disconnect all the cable from the SW Power Supply.

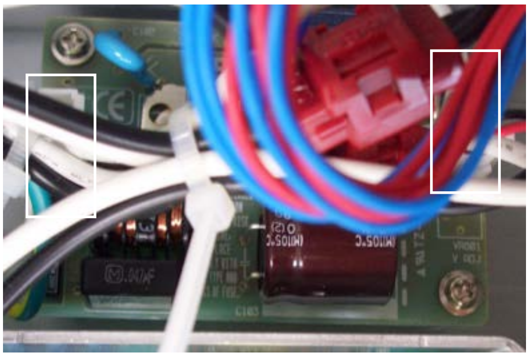


4 Remove the two screws shown in the figure and replace with the new SW Power Supply.
Connect all the cables to the SW Power Supply.

The voltage of this SW Power Supply cannot be adjusted.



5 Connect all the cable to the SW Power Supply.

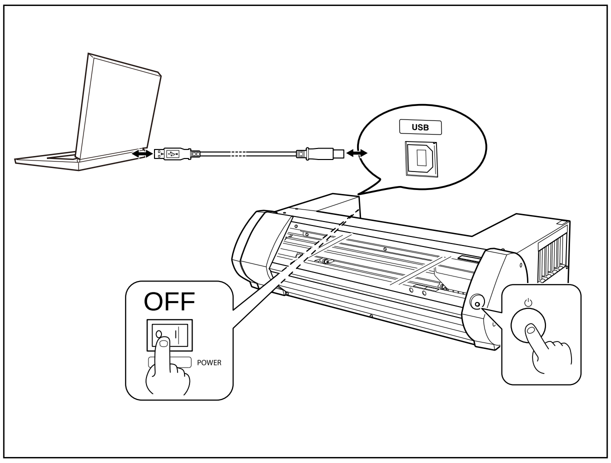


3-10 CARRIAGE BELT REPLACEMENT

!! IMPORTANT !!

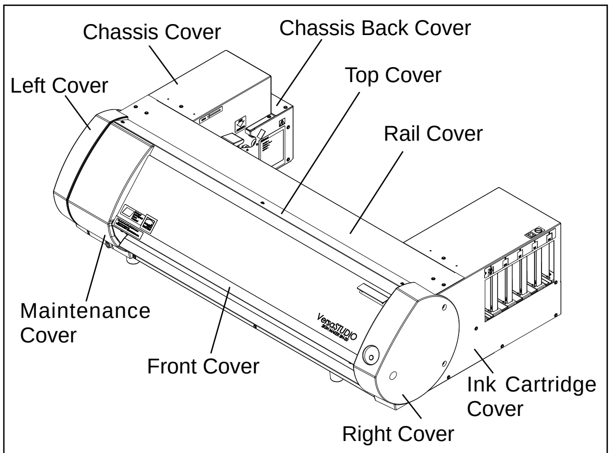
When replacing the Carriage Belt, make sure to connect the new belt to the current belt, and pass the new belt at the same time as removing the current belt.
There is a possibility that the new belt cannot be fixed without connecting the new belt to the current belt.

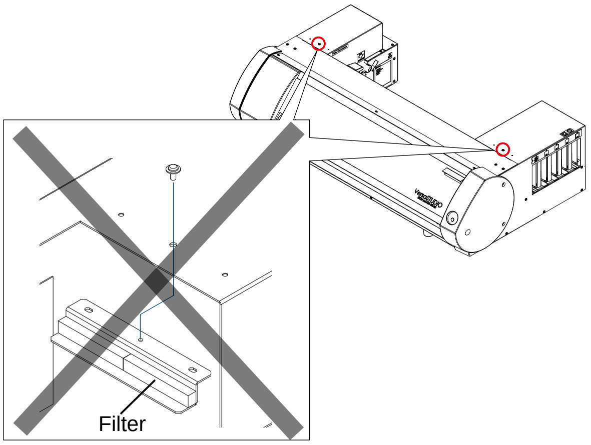
1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

2 Remove the following covers in order.

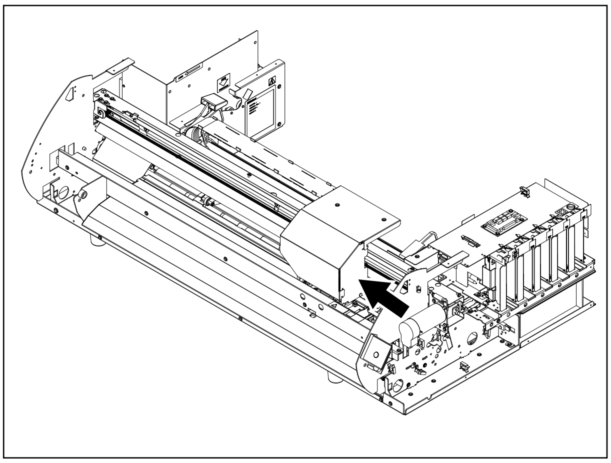
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

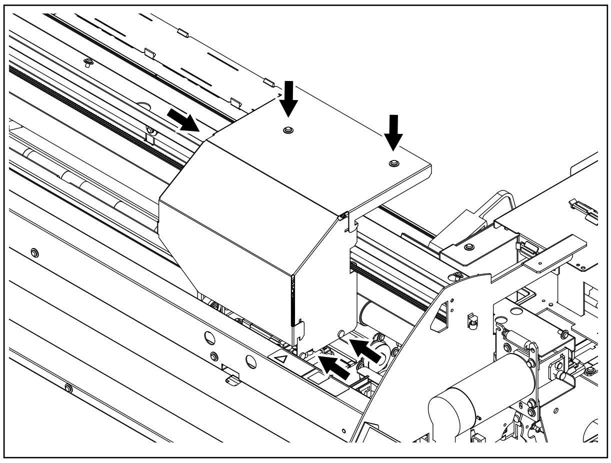


Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

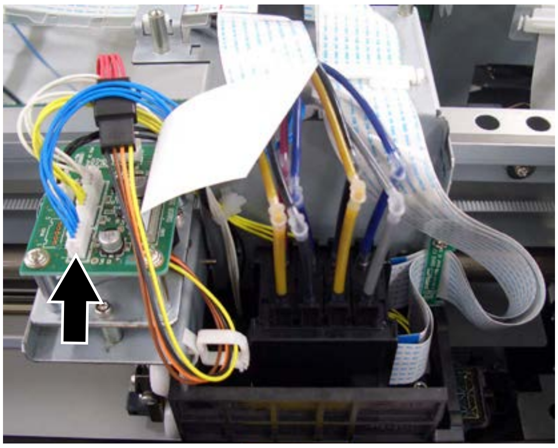
3 Move the Head Carriage on the Bed.



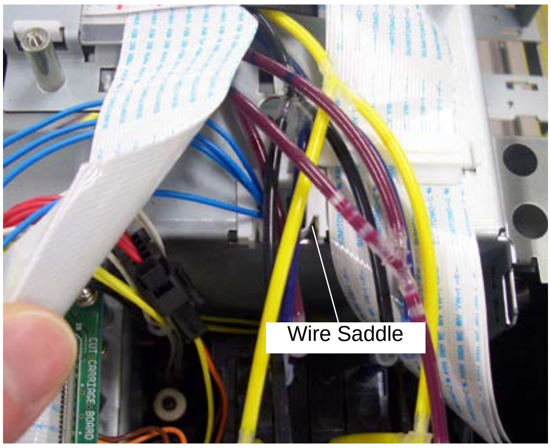
4 Remove the Head Carriage Cover.



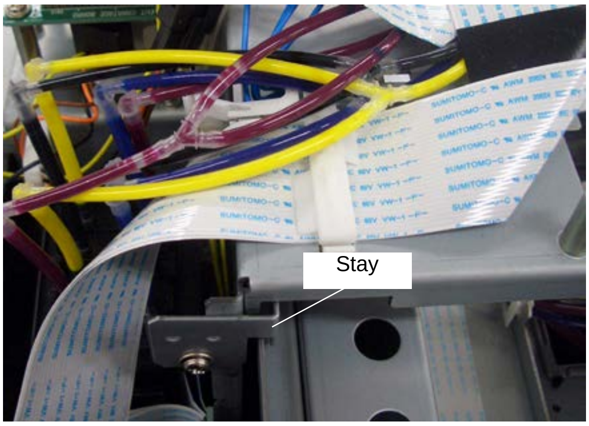
5 Remove the Linear Encoder Board Cable from the Cut Carriage Board.

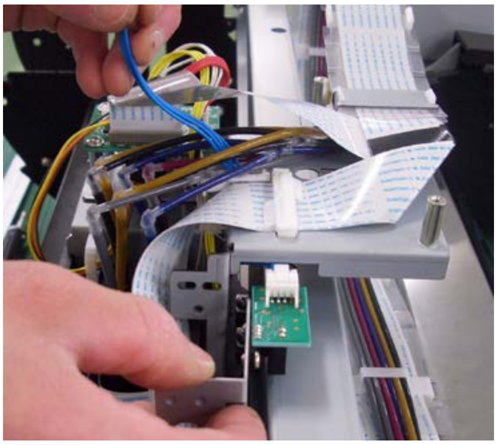


6 Open the Wire Saddle which attaches the Linear Encoder Board Cable.


Wire Saddle
CUT CARRIAGE BOARD

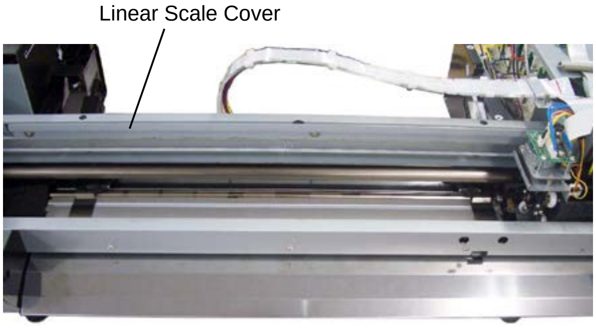
7 Remove the screw attaching the Stay of the Linear Encoder Board. Then, take out the Linear Encoder Board with the Stay from the right side of the Head Carriage.



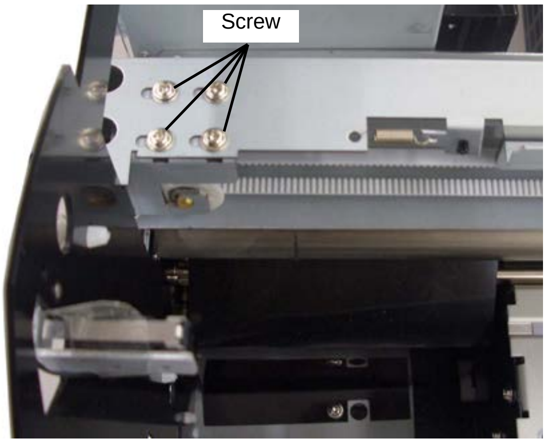


> Pull out the Linear Encoder Board with passing the Linear Encoder Board Cable through the Wire Saddle.

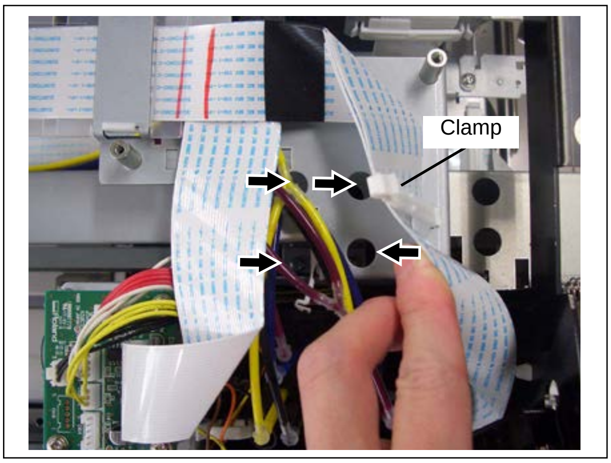
8 Remove the Linear Scale Cover.



9 Loosen the four screws shown in the figure to loosen the belt tension.

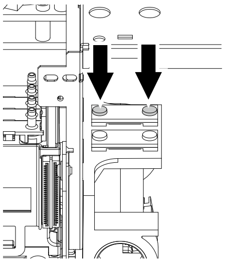


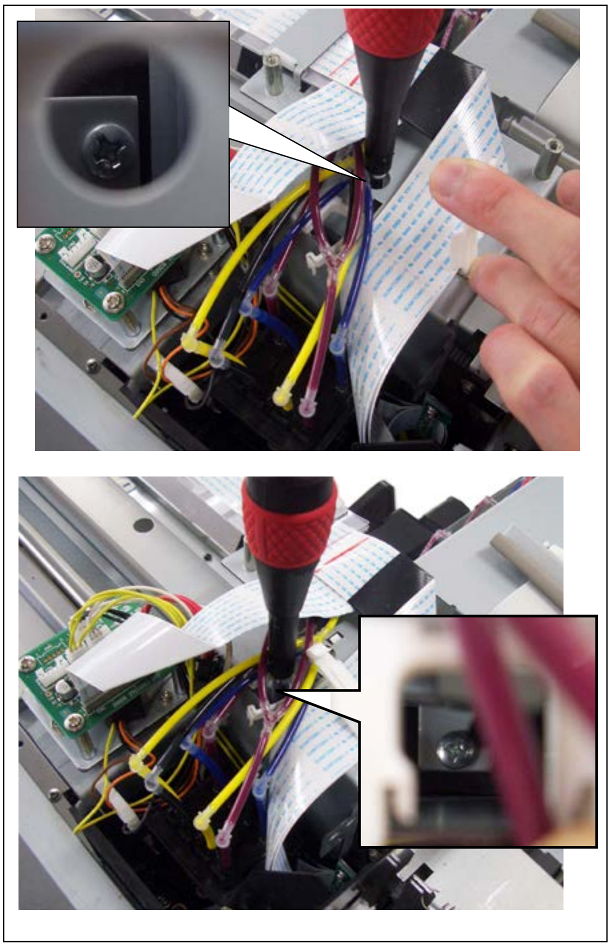
10 Move the Head Carriage to the capping position and open the clamp attaching the ribbon cables.
It is possible to loosen the screws attaching the carriage to the stay from the holes shown in the figure.



11 Loosen the screw attaching the Left Carriage Belt Stay.

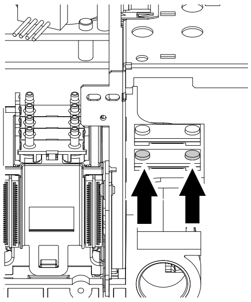
At this step, these screws are loosen.

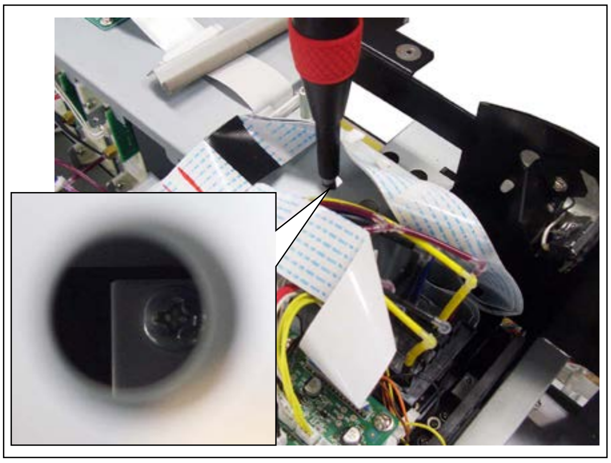


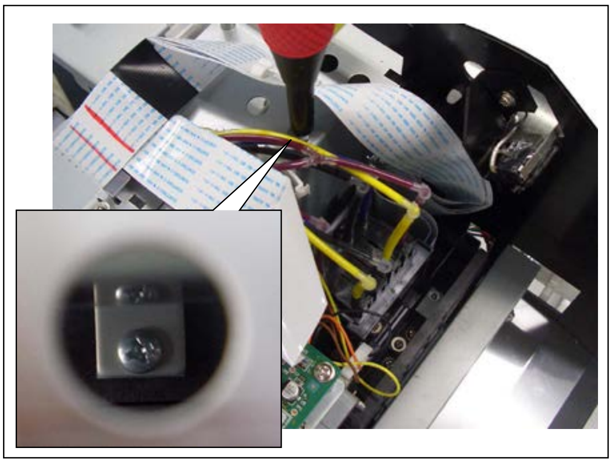


12 Loosen the screw attaching the Right Carriage Belt Stay.

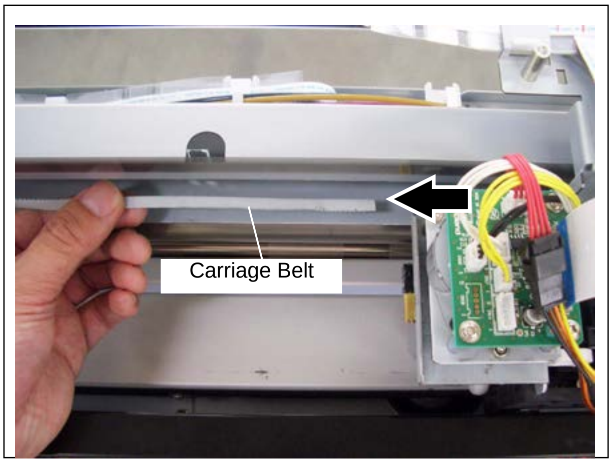
At this step, these screws are loosen.



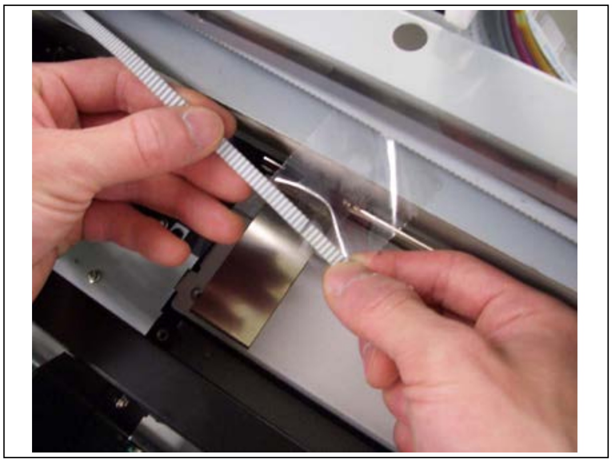




13 Take out the Carriage Belt from the left side of the Head Carriage.

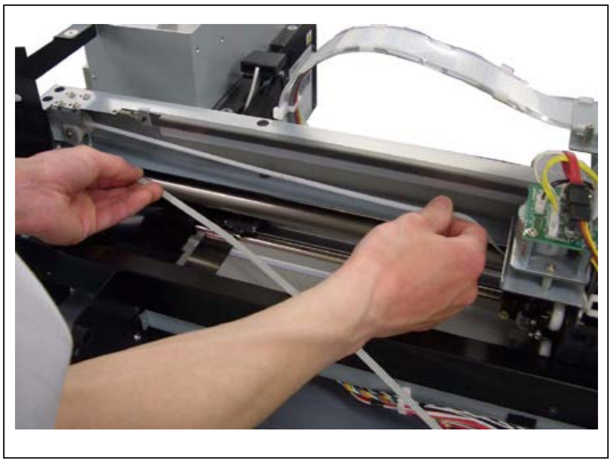


14 Connect the new Carriage Belt to the current Carriage Belt with the scotch tape.

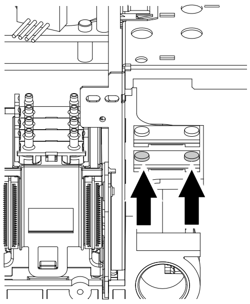


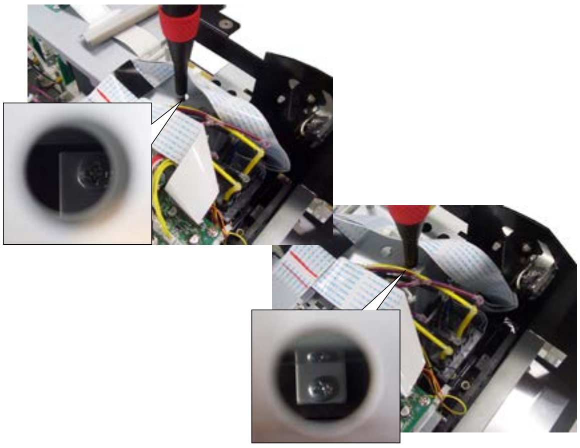
15 Slowly pull the Carriage Belt.
When the connecrtion part of new and current Carriage belt reach to the Right Belt Stay, tighten up the screw of the Right Belt Stay slightly not to remove the Carriage Belt.

> The screw of the Belt Stay is tapping screw. Tighten up the screw by following the created screw hole. If not, you will break the created scre hole and you cannot tighten up the screw.

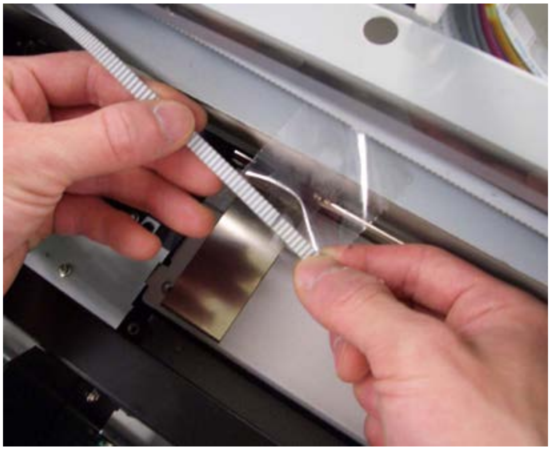


At this step, these screws are tightened up.

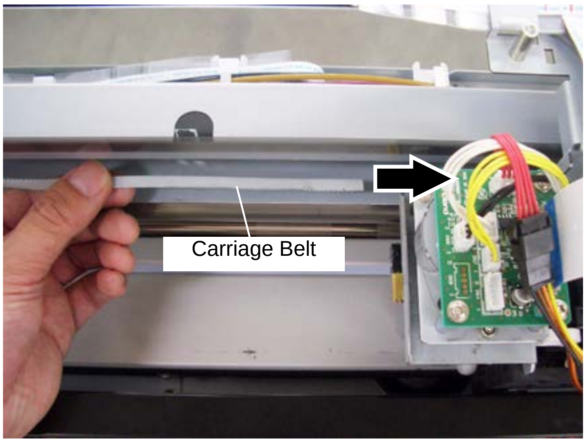




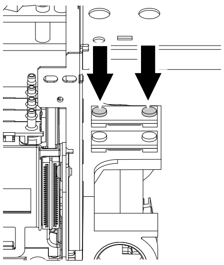
16 Disconnect the new Carriage Belt to the current Carriage Belt .

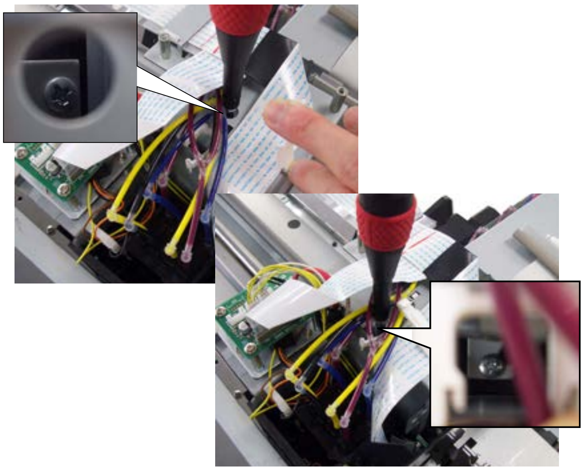


17 Insert the Carriage Belt from the left side of the Head Carriage and attach the Carriage Belt to the Left Belt Stay.



At this step, these screws are tightened up.





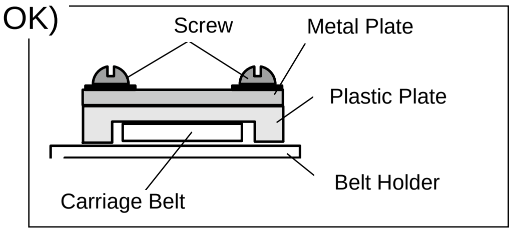
18 Tighten the screws as shown in the figure to attach both ends of the Carriage Belt to the Belt Holder with the plastic plate and metal plate.

When fixing the Carriage Belt, make sure the ends of the Carriage Belt are not overlapped.

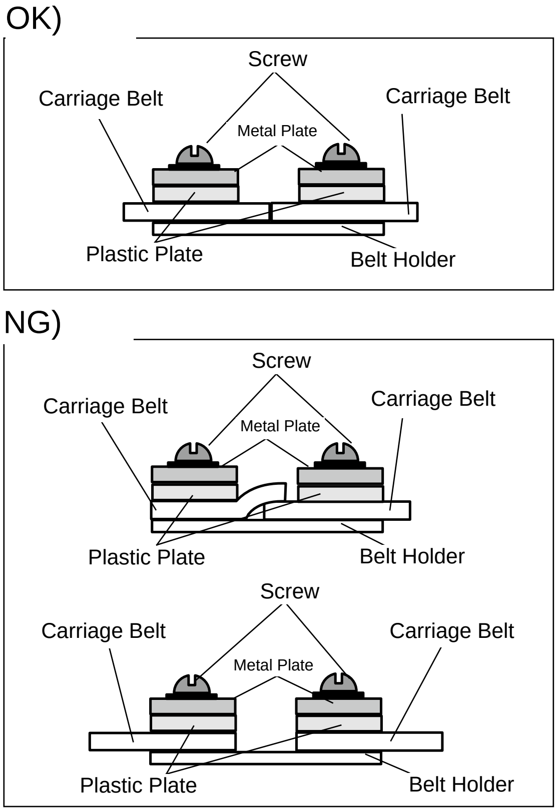
The screw of the Belt Stay is tapping screw. Tighten up the screw by following the created screw hole. If not, you will break the created scre hole and you cannot tighten up the screw.

Be careful with the fixing direction of the plastic plate and the fixing order of the plates.

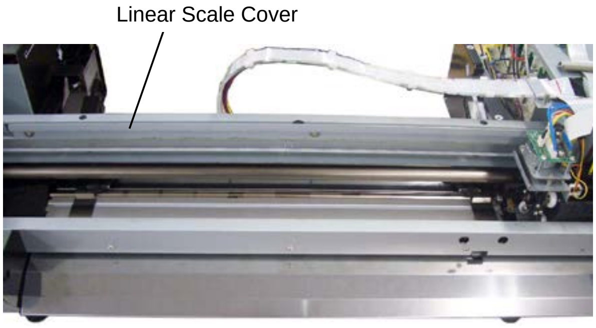
< Cross-section diagram >


OK)
Screw
Metal Plate
Plastic Plate
Belt Holder
Carriage Belt

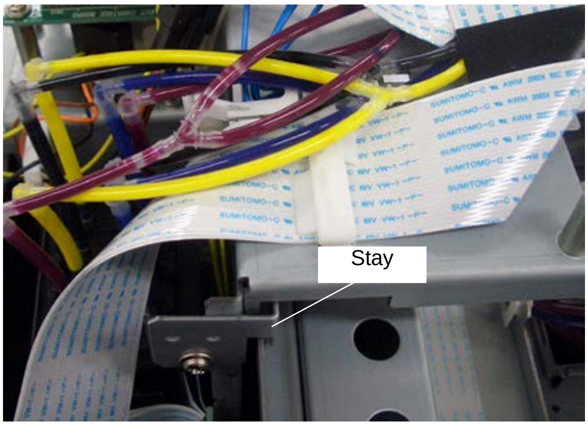
< Cross-section diagram >


OK)
Screw
Carriage Belt
Carriage Belt
Metal Plate
Plastic Plate
Belt Holder
NG)
Screw
Carriage Belt
Carriage Belt
Metal Plate
Plastic Plate
Belt Holder
Screw
Carriage Belt
Carriage Belt
Metal Plate
Plastic Plate
Belt Holder

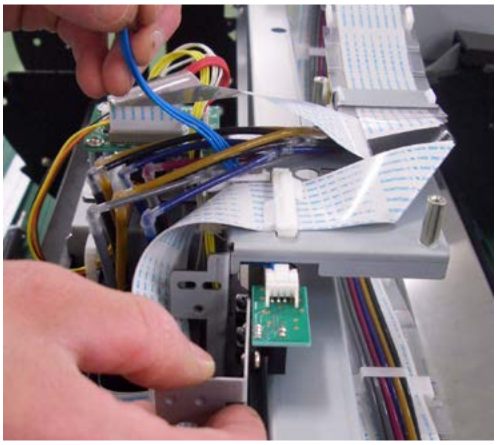
19 Attach the Linear Scale Cover.


Linear Scale Cover

20 Attach the Stay of the Linear Encoder Board with the Stay from the right side of the Head Carriage.

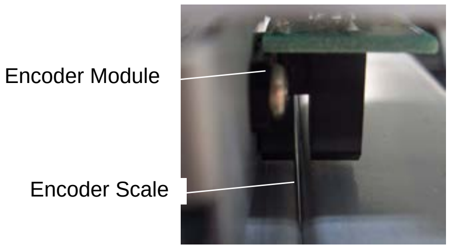


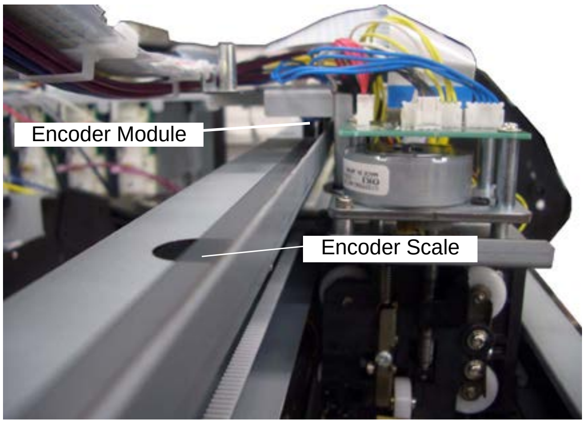
Attach the Linear Encoder Board with passing the Linear Encoder Board Cable through the Wire Saddle.



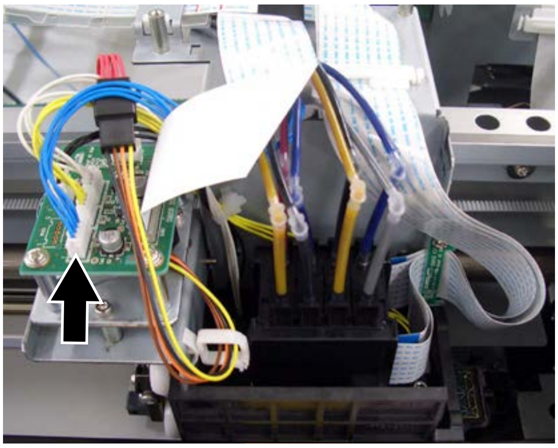
21 Move the Head Carriage in a whole width of the machine. Make sure that the Encoder Scale doesn't make contact with the Encoder Module and also Encoder Scale is between the slit of the Encoder Module.

<Closeup image of Encoder Scale and Module>

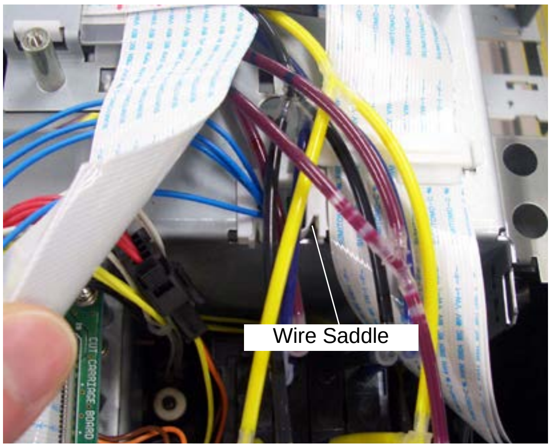

Encoder Module
Encoder Scale


Encoder Module
Encoder Scale

22 Connect the Linear Encoder Board Cable to the Cut Carriage Board.

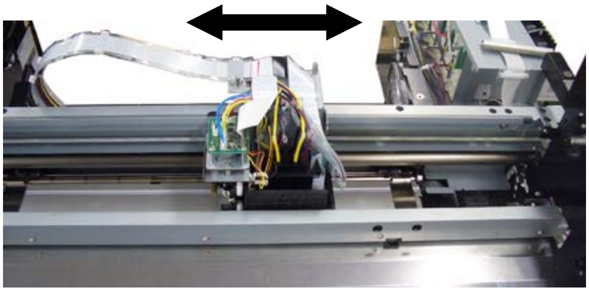


23 Close the Wire Saddle after passing the Linear Encoder Board Cable.


Wire Saddle

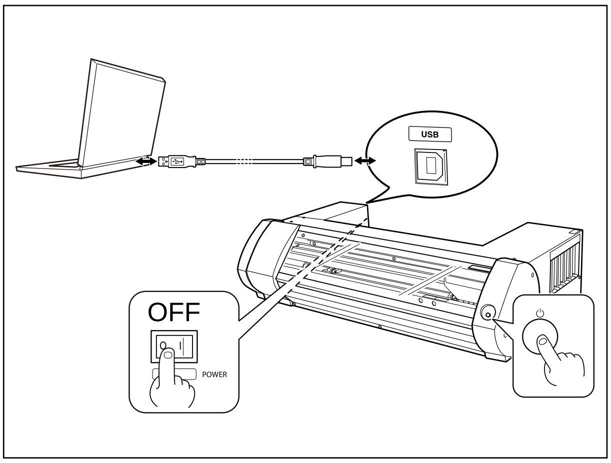
24 Move the Head Carriage in a whole width of the Guide Rail several times to remove the slack in the Carriage Belt. Then, carry out the following adjustments.

1. [4-9 BELT TENSION ADJUSTMENT]
2. [4-10 BELT POSITION ADJUSTMENT]
3. [4-4 LINEAR ENCODER SETUP]
4. CUTTING QUALITY CHECK



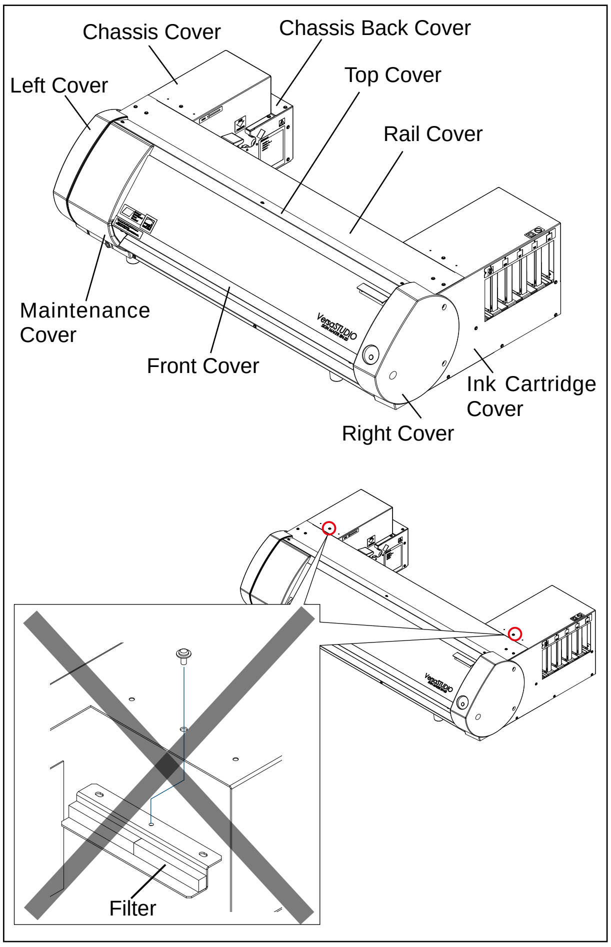
3-11 ENCODER SCALE REPLACEMENT

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

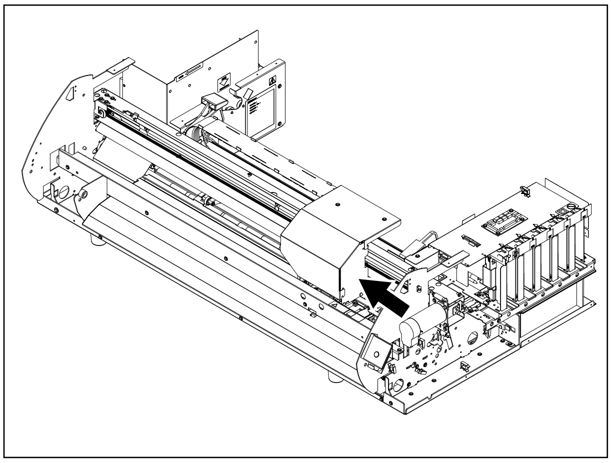
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

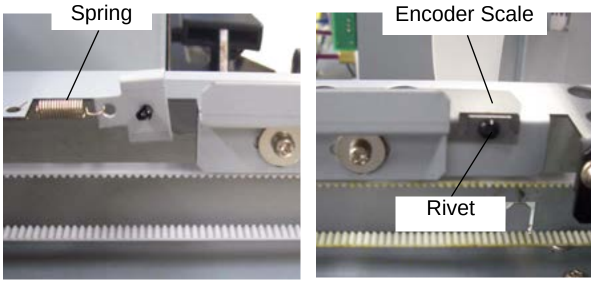

Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

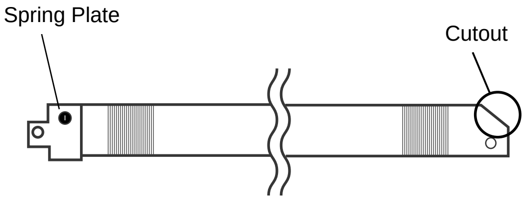
3 Move the Head Carriage on the Bed.



4 Remove the Encoder Scale by removing the rivet attaching the Encoder Scale at its right end and the spring on its left end.

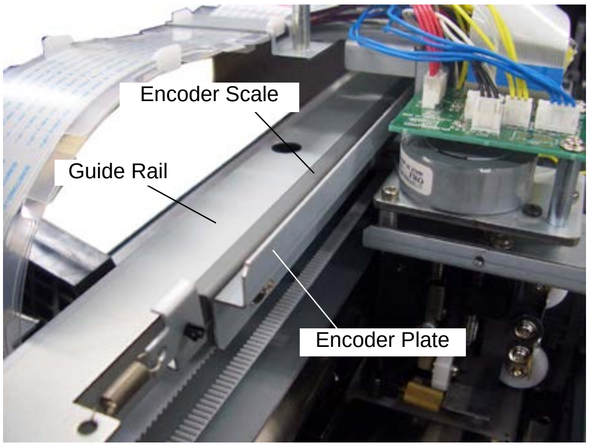

Spring
Encoder Scale
Rivet

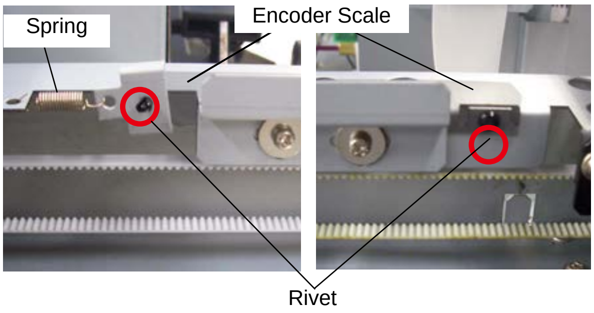
5 Remove the Spring Plate from the Encoder Scale and attach it to the new Encoder Scale where there is no cutout on it.


Spring Plate
Cutout

Make sure not to scratch or put grease on the Encoder Scale when attaching it.
Do not touch the surface of the Encoder Scale.

6 Put the Encoder Scale in between the Encoder Plate and the Guide Rail.
Then, attach the right end with the rivet and hook up the spring on the left end.
Make sure that the Encoder Scale is in place.

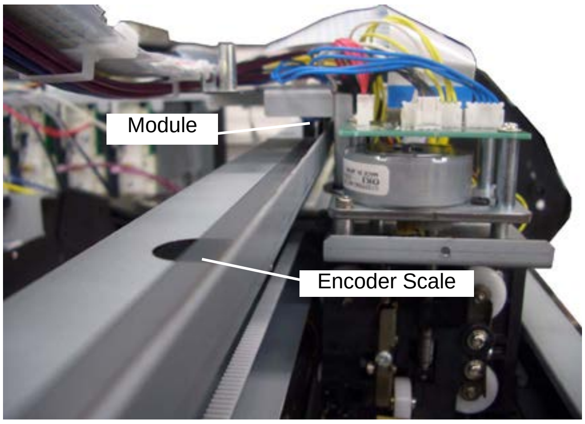

Encoder Scale
Guide Rail
Encoder Plate


Spring
Encoder Scale
Rivet

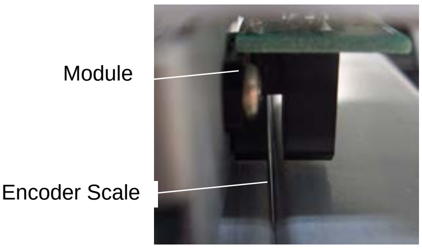
Do not loosen or tighten the screws attaching the Encoder Plate.

7 Move the Head Carriage in a whole width of the machine. Make sure that the Encoder Scale doesn't make contact with the Encoder Module and also Encoder Scale is between the slit of the Encoder Module.

Carry out the [4-4 LINEAR ENCODER SETUP].

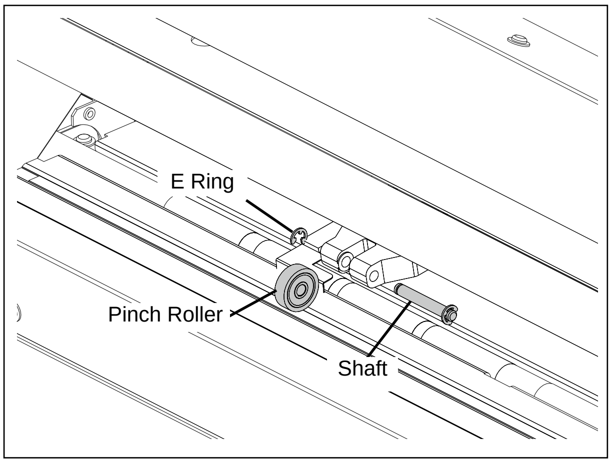

Module
Encoder Scale

<Closeup image of Encoder Scale and Module>

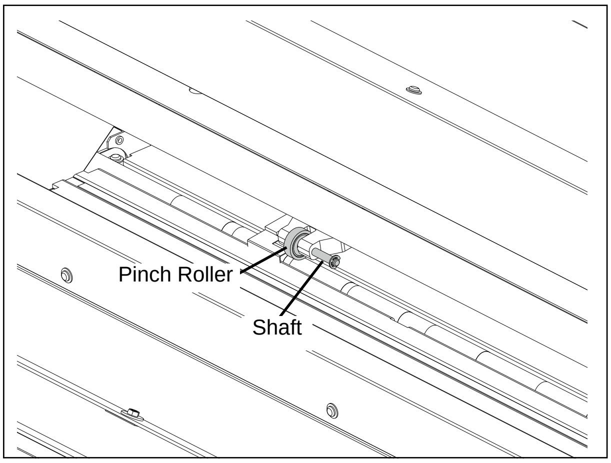

Module
Encoder Scale

3-12 PINCH ROLLER REPLACEMENT

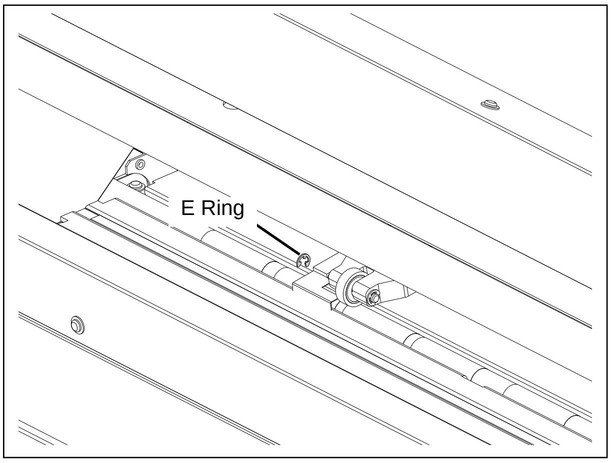
1 Remove the E Ring on one side of the Pinch Roller and pull out the Shaft.


E Ring
Pinch Roller
Shaft

2 Put the new Pinch Roller and insert the Shaft into the Pinch Roller.

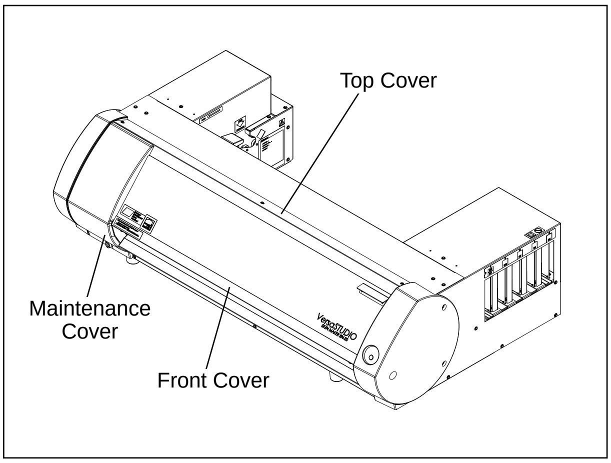

Pinch Roller
Shaft

3 Fix the E Ring and check that the Pinch Roller rotates smoothly.

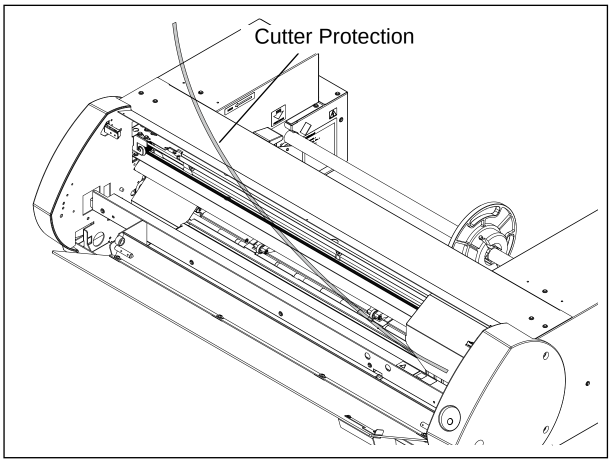


3-13 CUTTER PROTECTION REPLACEMENT

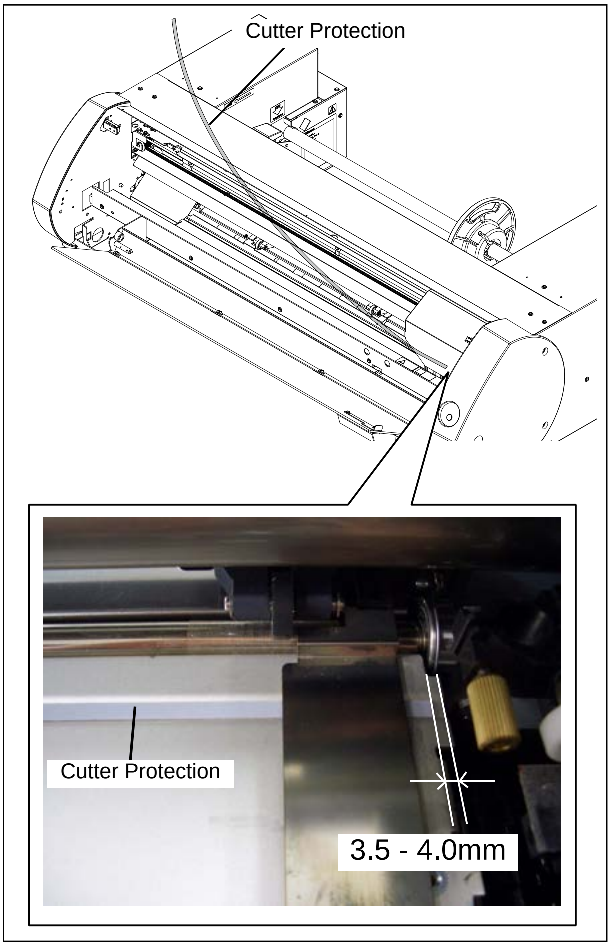
1 Open the Front Cover and remove the Maintenance Cover and the Top Cover.


Top Cover
Maintenance Cover
Front Cover

2 Remove the Cutter Protection.
Then, wipe and remove the adhesion on the Bed with alcohol.


Cutter Protection

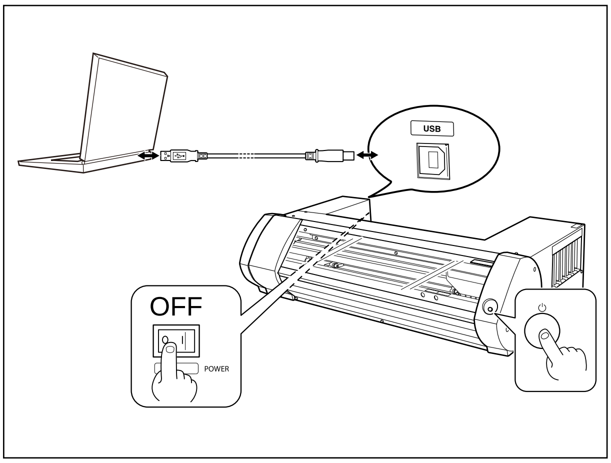
3 Attach the Cutter Protection from 3.5 - 4.0mm from right edge of the Bed.


Cutter Protection
Cutter Protection
3.5 - 4.0mm

4 Make sure that the Cutter Protection is not bumpy.

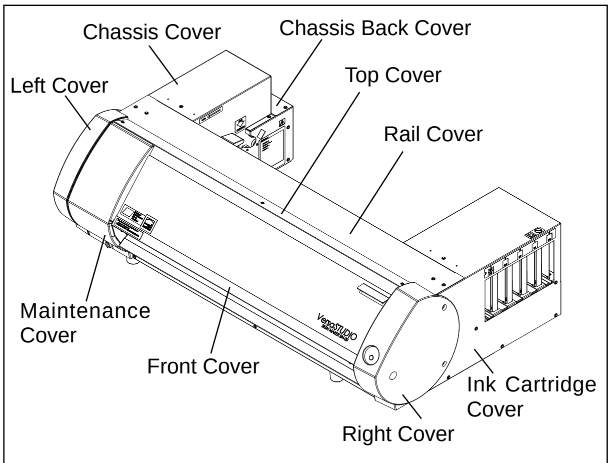
3-14 LINEAR ENCODER BOARD REPLACEMENT

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

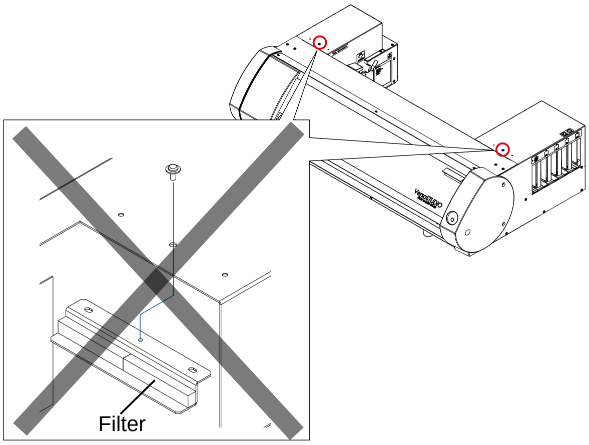

USB
OFF
POWER

2 Remove the following covers in order.

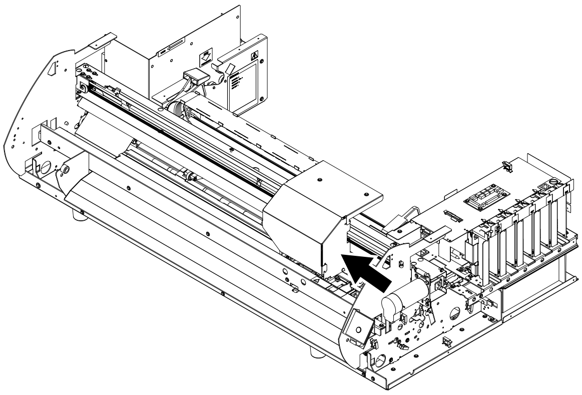
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

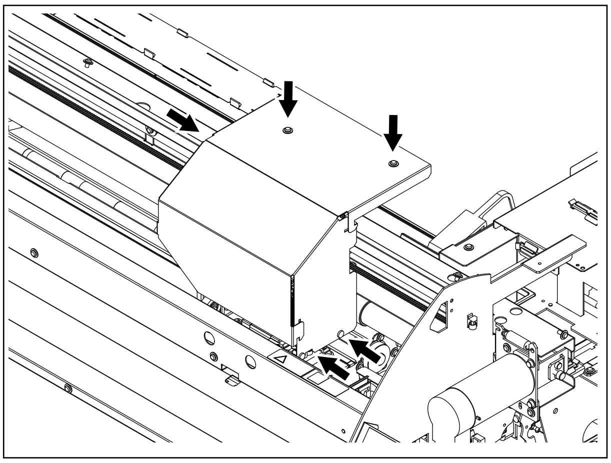
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.



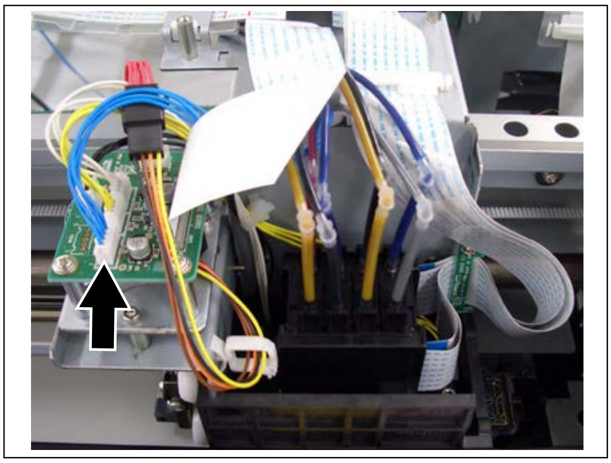
3 Move the Head Carriage on the Bed.



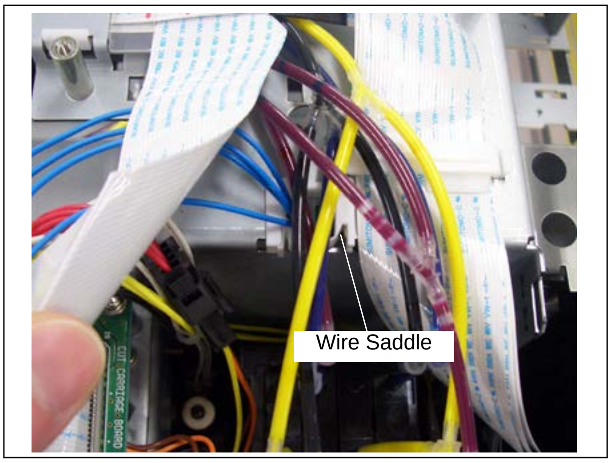
4 Remove the Head Carriage Cover.



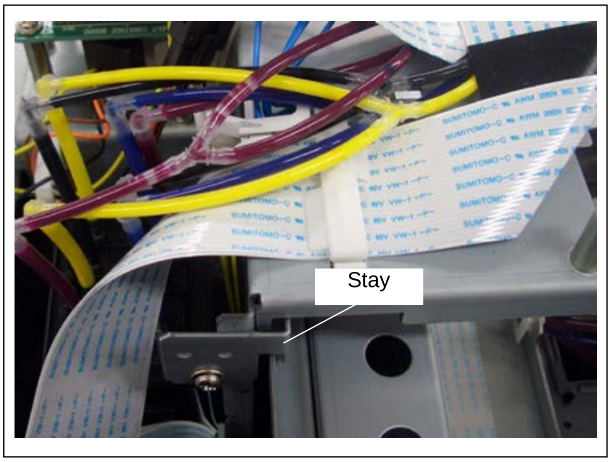
5 Remove the Linear Encoder Board Cable from the Cut Carriage Board.



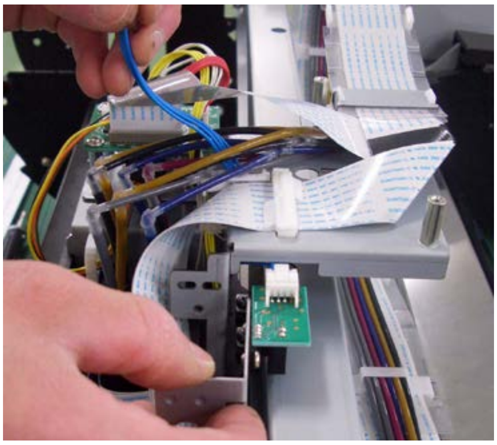
6 Open the Wire Saddle which attaches the Linear Encoder Board Cable.



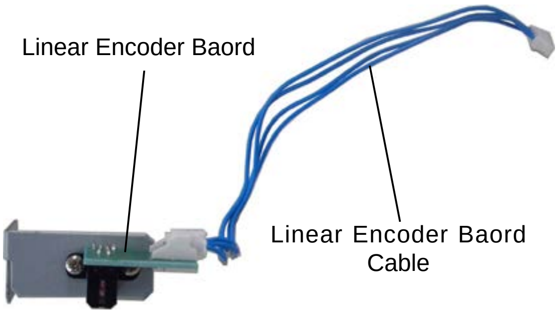
7 Remove the screw attaching the Stay of the Linear Encoder Board. Then, take out the Linear Encoder Board with the Stay from the right side of the Head Carriage.



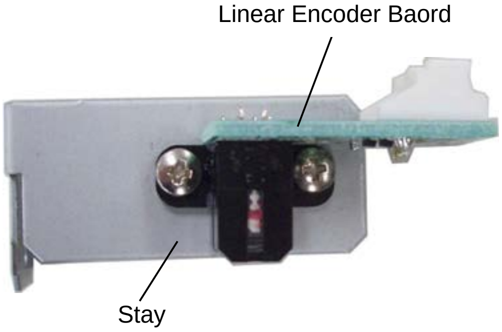
Pull out the Linear Encoder Board with passing the Linear Encoder Board Cable through the Wire Saddle.



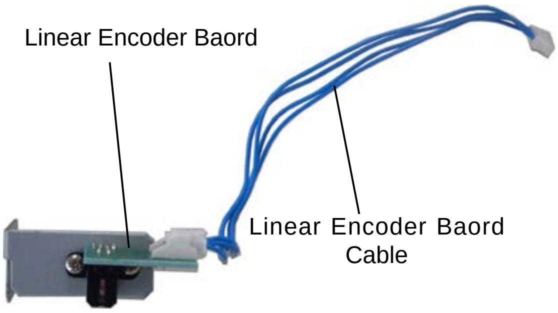
8 Remove the Linear Encoder Cable from the Linear Encoder Board.


Linear Encoder Baord
Linear Encoder Baord Cable

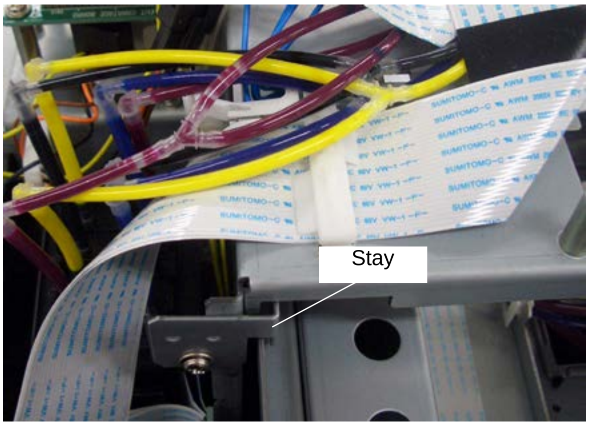
9 Remove the Linear Encoder Board from the Stay.
Then, attach the new the Linear Encoder Board to the Stay

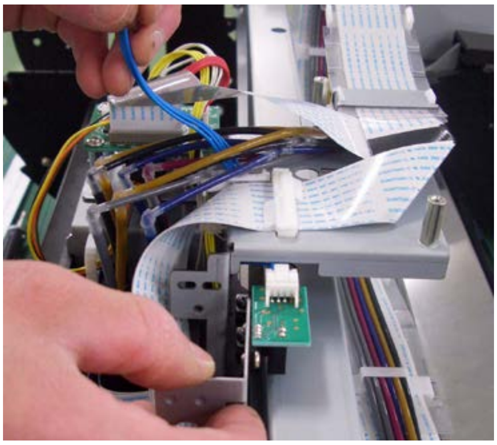

Linear Encoder Baord
Stay

10 Attach the Linear Encoder Cable to the Linear Encoder Board.


Linear Encoder Baord
Linear Encoder Baord Cable

11 Attach the Stay of the Linear Encoder Board with the Stay from the right side of the Head Carriage.

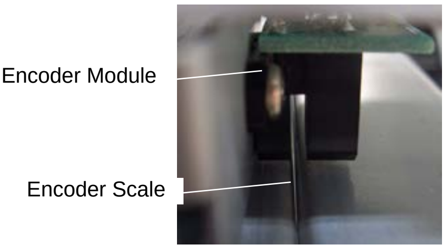


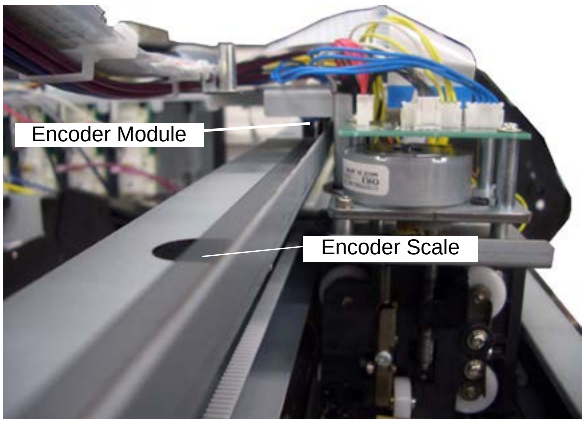


Attach the Linear Encoder Board with passing the Linear Encoder Board Cable through the Wire Saddle.

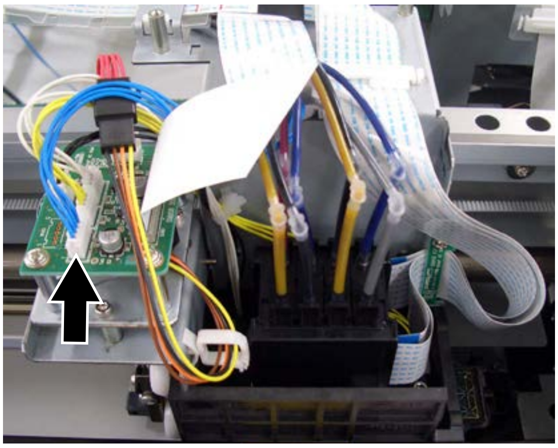
12 Move the Head Carriage in a whole width of the machine. Make sure that the Encoder Scale doesn't make contact with the Encoder Module and also Encoder Scale is between the slit of the Encoder Module.

<Closeup image of Encoder Scale and Module>

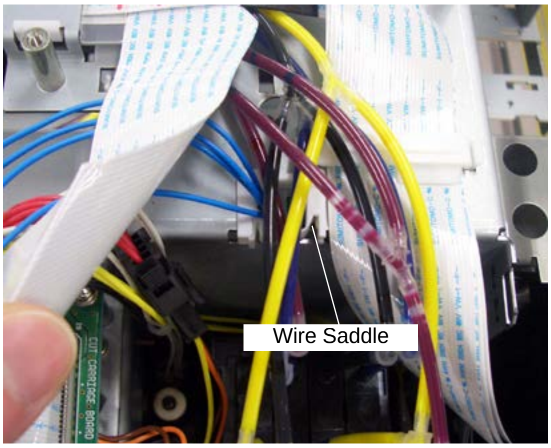

Encoder Module
Encoder Scale


Encoder Module
Encoder Scale

13 Connect the Linear Encoder Board Cable to the Cut Carriage Board.

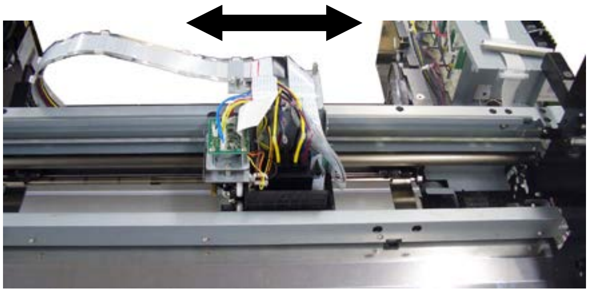


14 Close the Wire Saddle after passing the Linear Encoder Board Cable.


Wire Saddle
CUT CARRIAGE BOARD

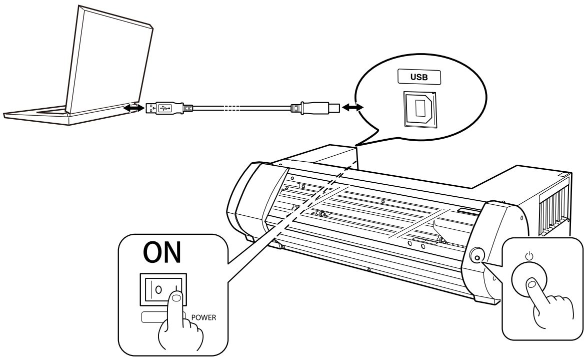
15 Move the Head Carriage in a whole width of the Guide Rail several times to remove the slack in the Carriage Belt.
Then, carry out the following adjustments.

1. [4-4 LINEAR ENCODER SETUP]

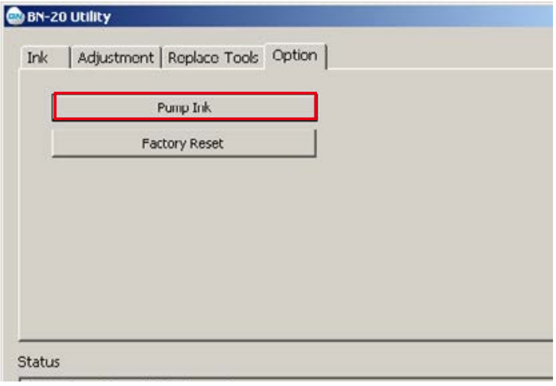


3-15 INK TUBE REPLACEMENT

1 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.

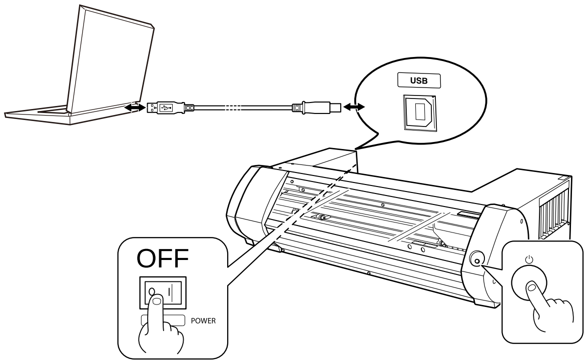

USB
ON
POWER

2 Start up the BN20 Utillity and click [Option]>[Pump up]. The working time is 12 minutes.


BN-20 Utility
Ink
Adjustment
Replace Tools
Option
Pump Ink
Factory Reset
Status

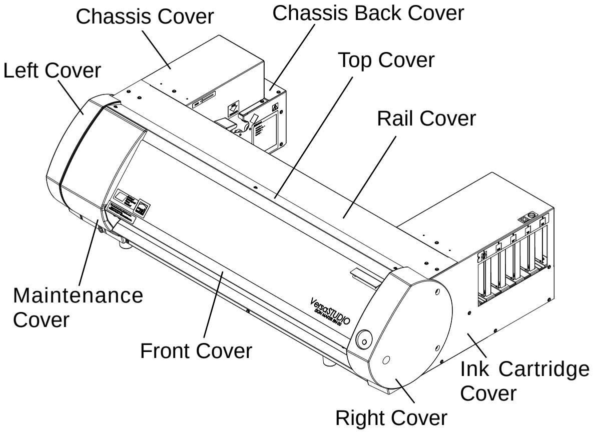
You cannot remove all ink completely by performing the Pump up.

3 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

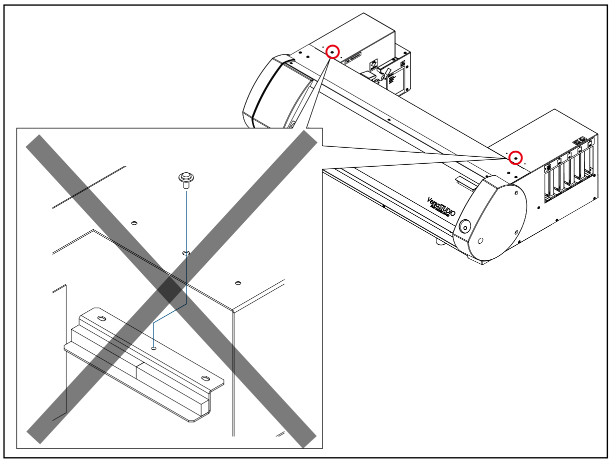

USB
OFF
POWER

4 Remove the following covers in order.

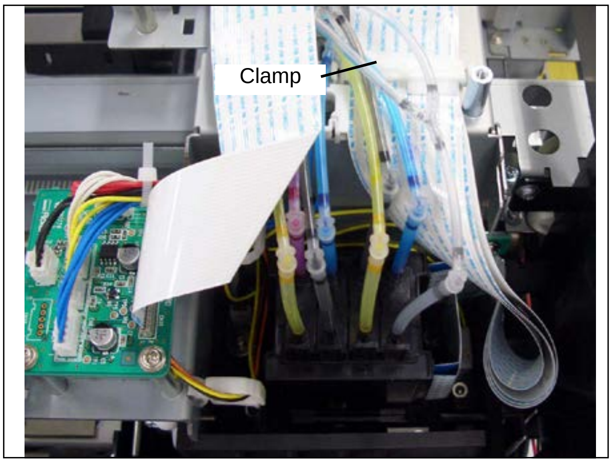
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

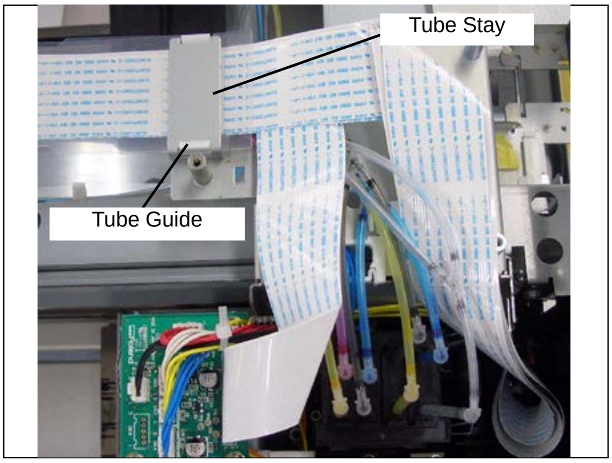
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.



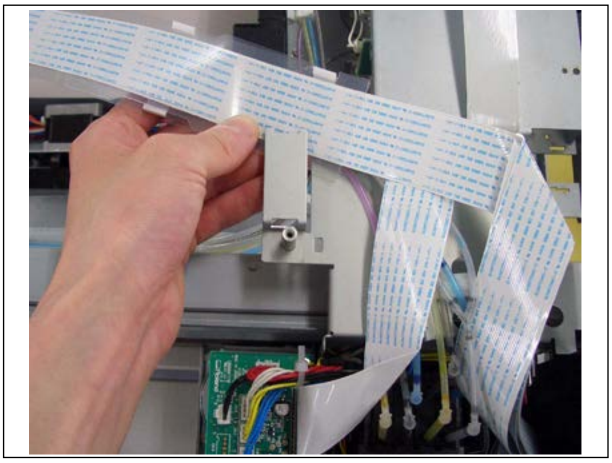
5 Open the Clamp which attaches the Ribbon Cables of the Head.



6 Remove the Tube Guide shown in the figure from the Tube Stay.

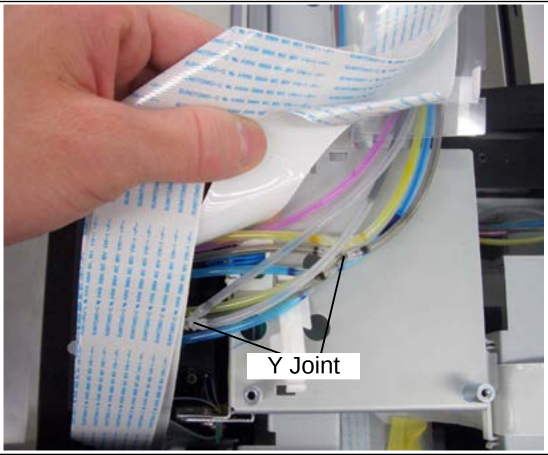


7 Put the Ribbon Cables and the Ink Tubes on the Tube Stay.

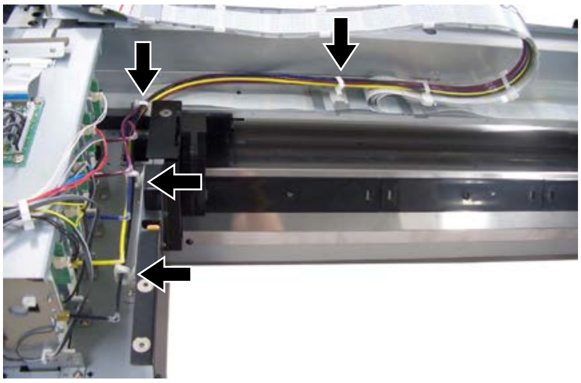


8 Turn the Ribbon Cables and the Ink Tubes and remove the Ink Tube from the Y Joint at the Head Carriage side.

Ink could leak from the Ink Tube.

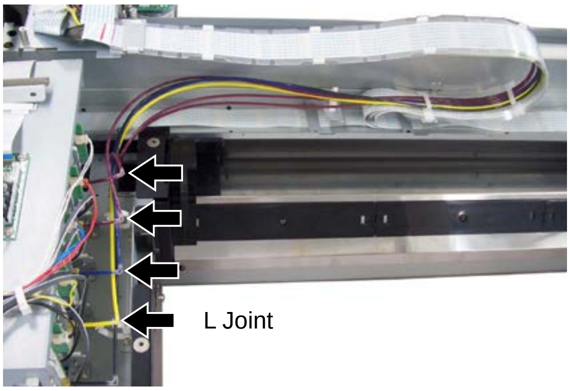


9 Open the Wire Saddles shown in the figure and remove the Ink Tubes from the Wire Saddles.

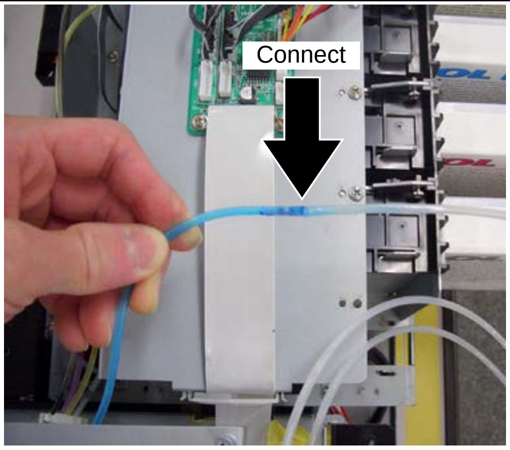


10 Remove the Ink Tubes from the L Joint.

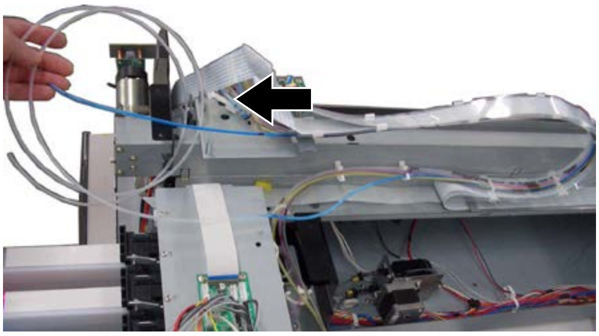
Ink could leak from the Ink Tube.



11 Connect the removed Ink Tube at the Ink Cartridge side to the new Ink Tube with the clear tape.



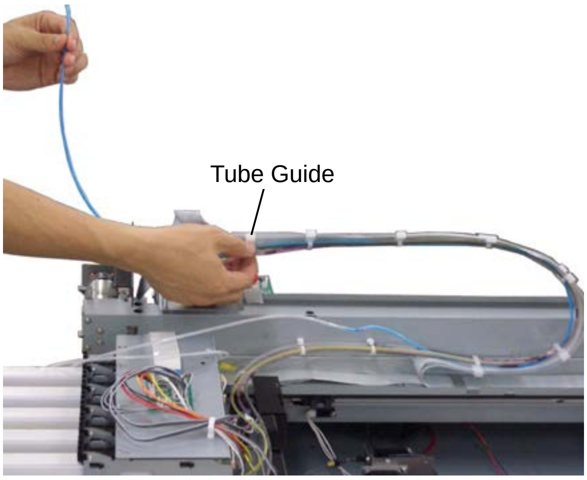
12 Pull the Ink Tube unitil the connected part of the new Ink Tube reaches to the Y Joint at the Head Carriage side.

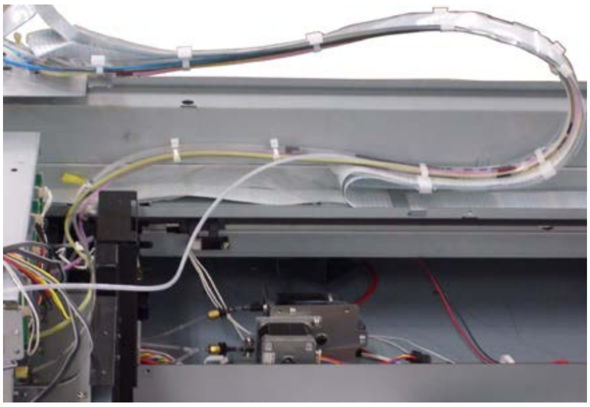


It is easier to pull the Ink Tube toward the Head Carriage.

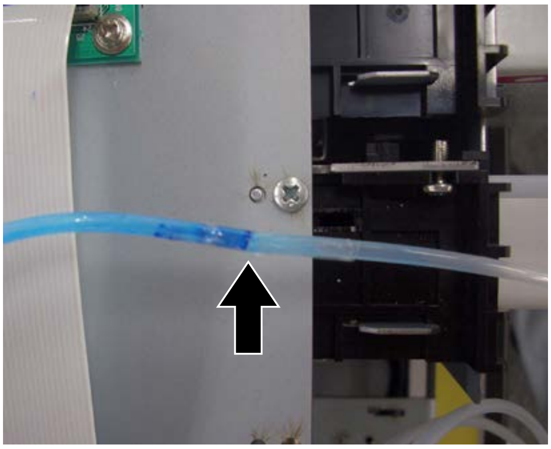
Ink could leak from the Ink Tube.

You can pull the Ink Tube easlily with holding the Tube Guide.

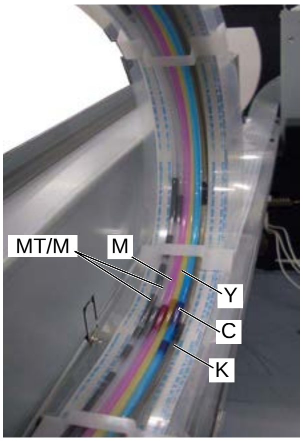




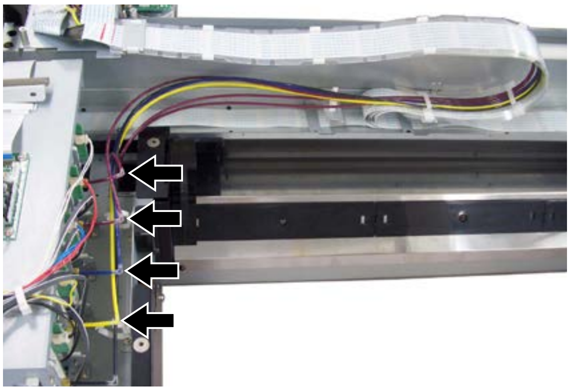
13 Disconnect the current Ink Tube from the new Ink Tube.



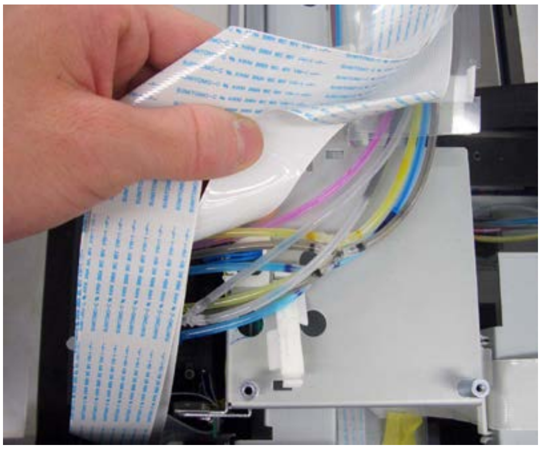
14 Check whether the Ink Tubes are attached in order shown in the figure.



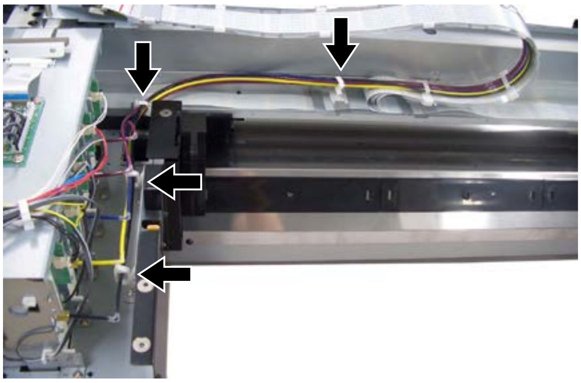
15 Connect the new Ink Tube to the L Joint at the Ink Cartridge side.



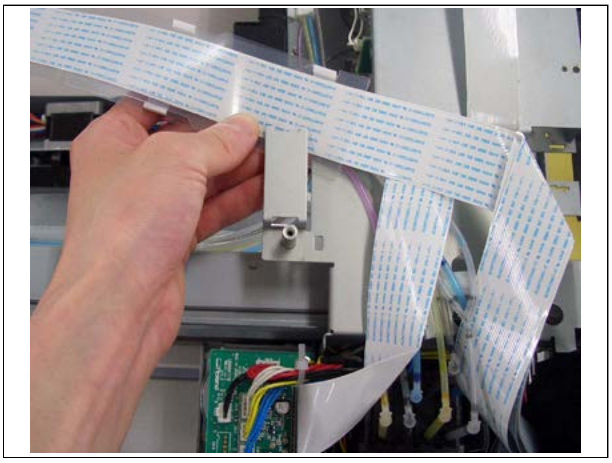
16 Turn the Ribbon Cables and the Ink Tubes and connect the new Ink Tube to Y Joint at the Head Carriage side.



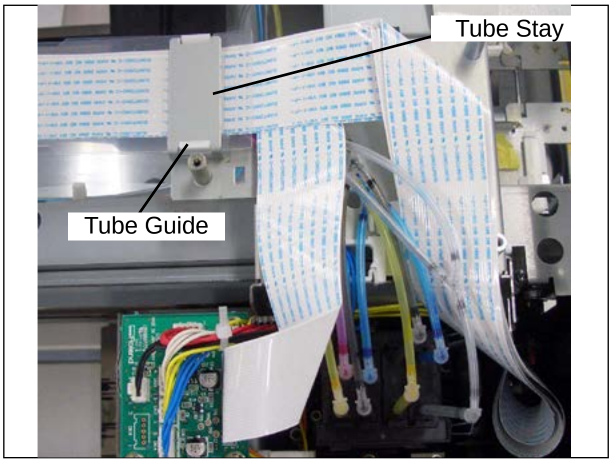
17 Put the Ink Tubes in the Wire Saddles shown in the figure and close the Wire Saddles.



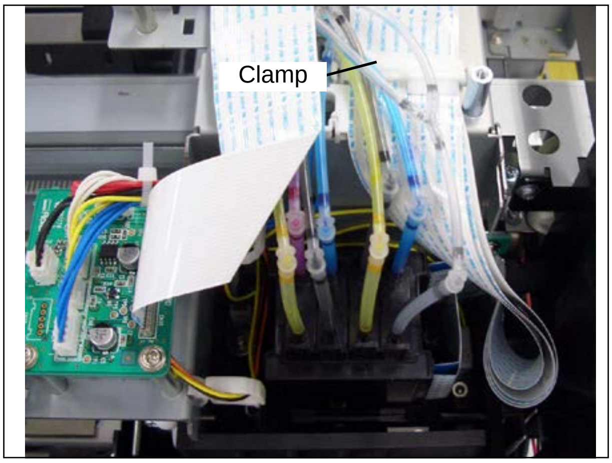
18 Put the Ribbon Cables and the Ink Tubes under the Tube Stay.



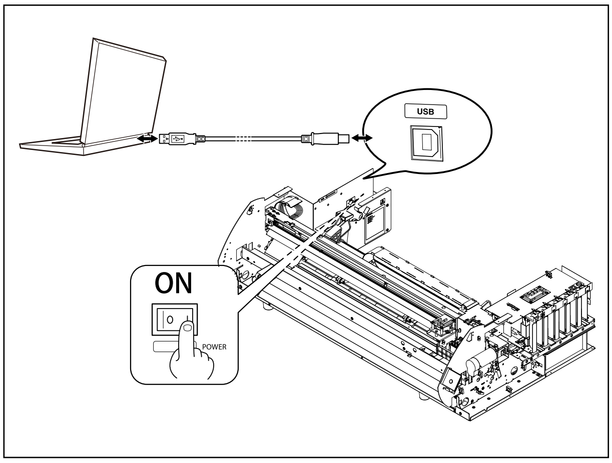
19 Attach the Tube Guide shown in the figure to the Tube Stay.



20 Close the Clamp which attaches the Ribbon Cables of the Head.

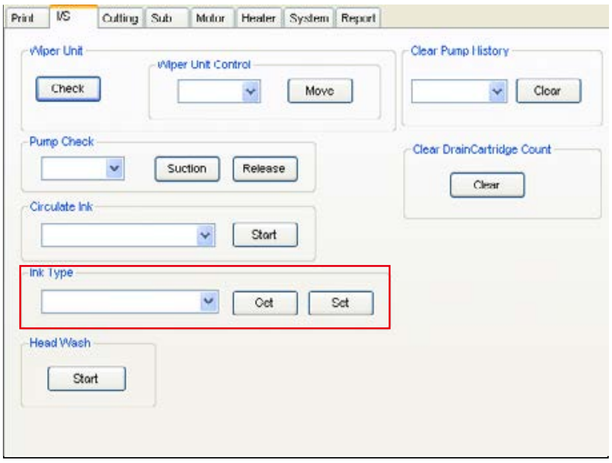


21 Turn on the Main Power SW and connect the printer to the PC by the USB cable.

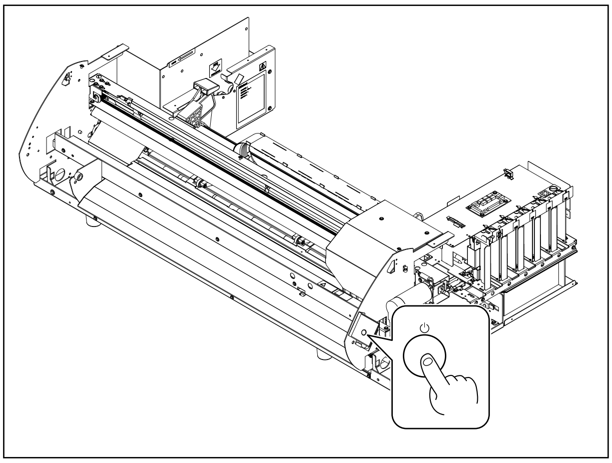


In this procedure, Ink Fill is performed without using the Cleaning Ink Cartridges. If you would like to clean the ink line with cleaning liquid, turn on the Sub Power SW at this step and perform Fill Ink which is done at the machine installation.

22 Start up the Service Application.
Select the Ink Type in [I/S]>[Ink Type] and click [Set].

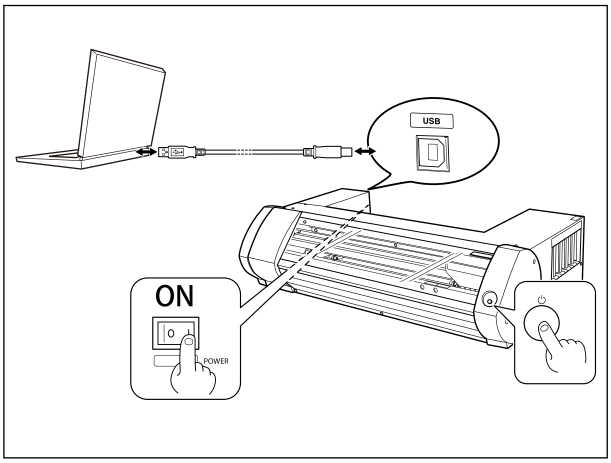

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Wiper Unit
Check
Wiper Unit Control
Move
Clear Pump History
Clear
Pump Check
Suction
Release
Clear DrainCartridge Count
Clear
Circulate Ink
Start
Ink Type
Get
Set
Head Wash
Start

23 Turn on the Sub Power SW.
Perform the Fill Ink with following the wizard on the PC.



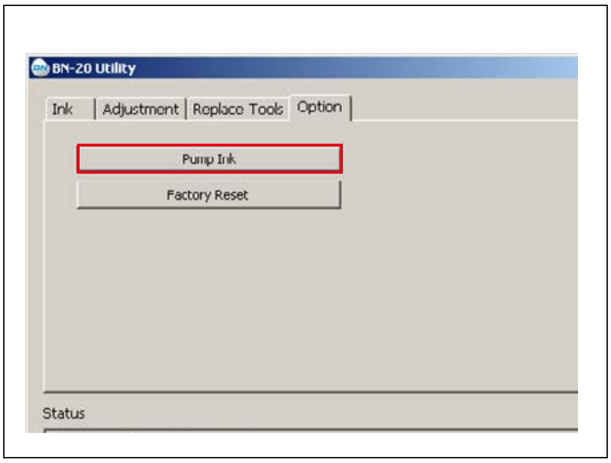
3-16 INK TUBE REPLACEMENT (CIRCURATING PUMP LINE) BN-20/BN-20D △22 △25

1 Turn on the Main Power SW, and then turn on the Sub Power SW. Then, connect the printer to the PC by the USB cable.

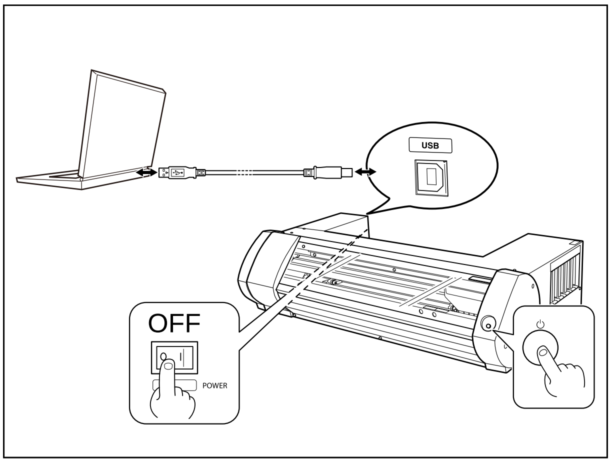

USB
ON
POWER

2 Start up the BN20 Utillity and click [Option]>[Pump up].
The working time is 12 minutes.

You cannot remove all ink completely by performing the Pump up.

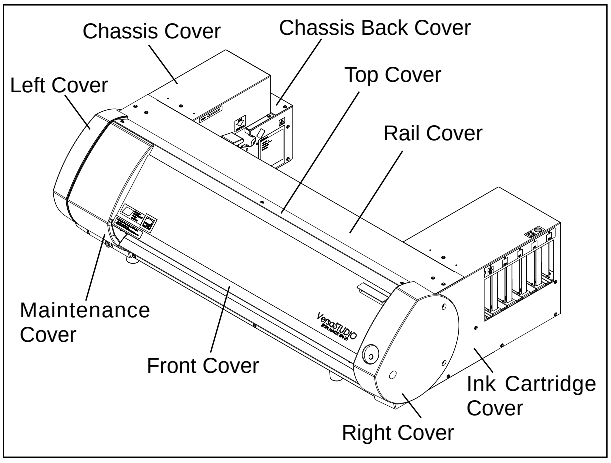

BN-20 Utility
Ink
Adjustment
Replace Tools
Option
Pump Ink
Factory Reset
Status

3 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.

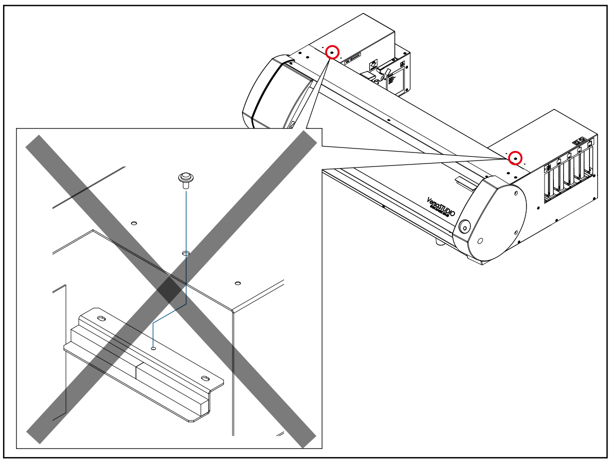

USB
OFF
POWER

4 Remove the following covers in order.

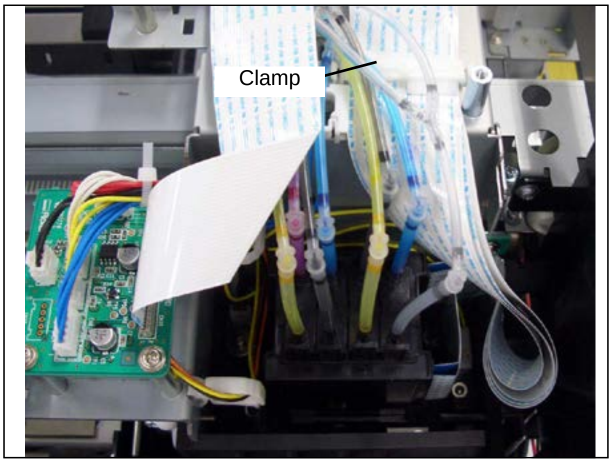
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

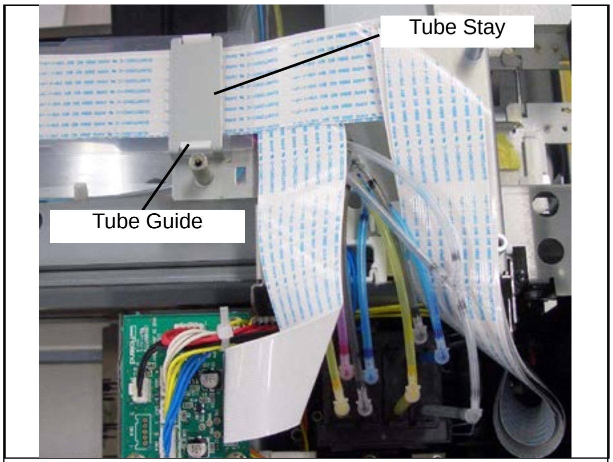
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.



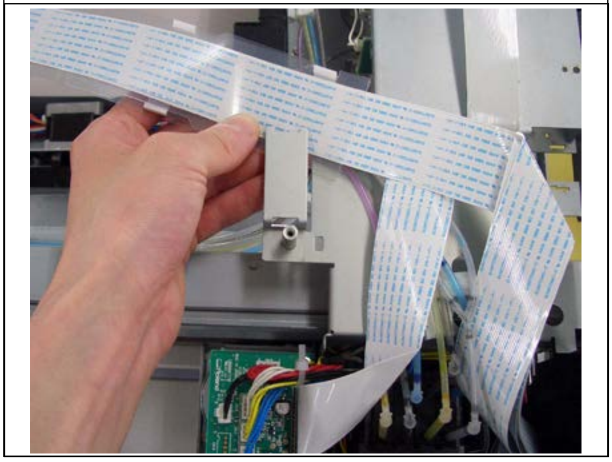
5 Open the Clamp which attaches the Ribbon Cables of the Head.



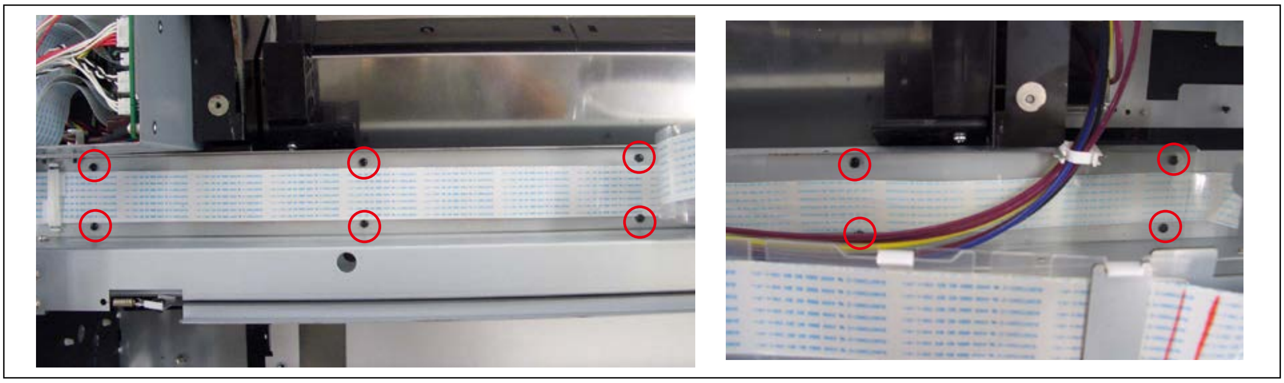
6 Remove the Tube Guide shown in the figure from the Tube Stay.



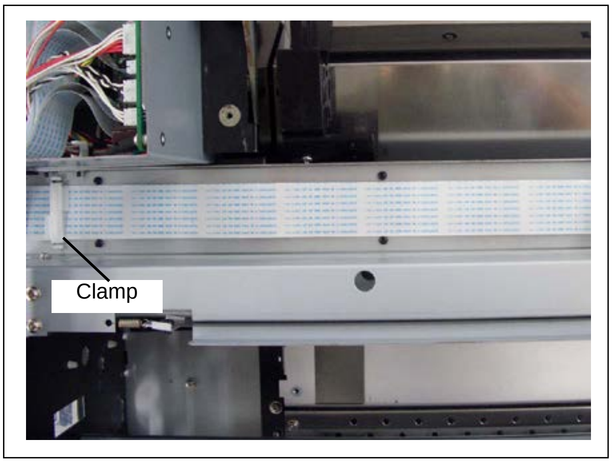
7 Put the Ribbon Cables and the Ink Tubes on the Tube Stay.



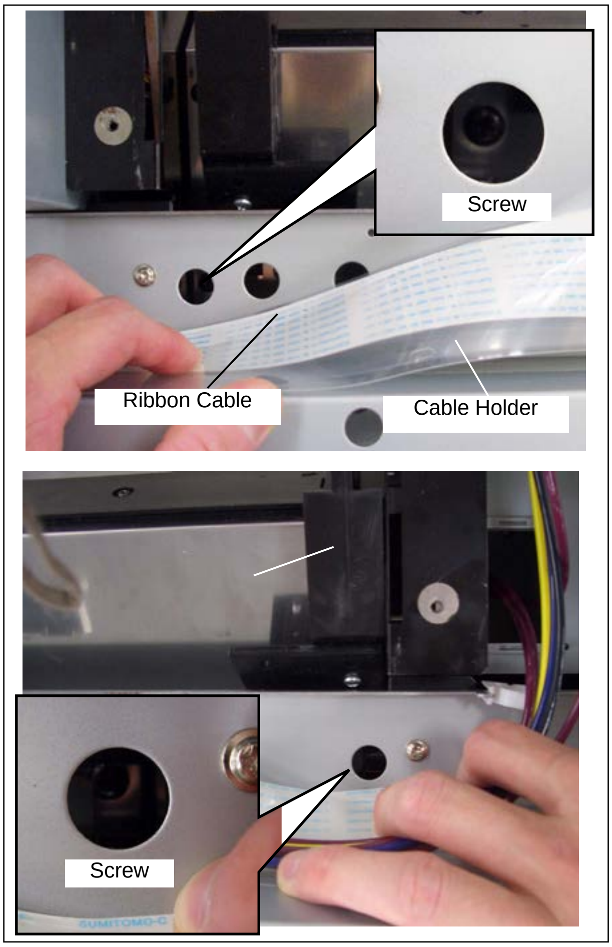
8 Remove the Rivets which attaches the Cable Holder and the Guide Rail.



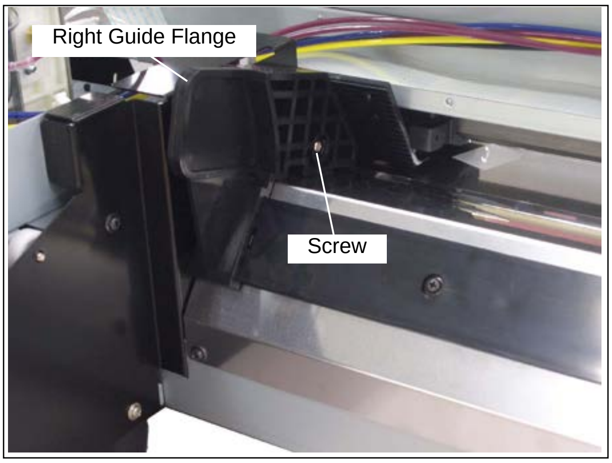
9 Open the Clamp shown in the figure.



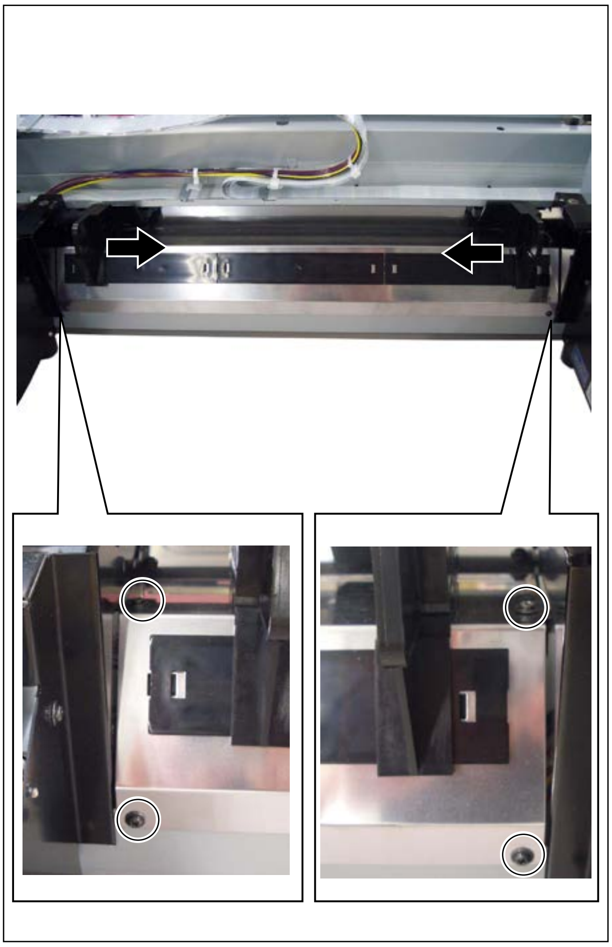
10 Turn the Ribbon Cables and the Cable Holders.
Remove the Screw from the hole shown in the figure.


Screw
Ribbon Cable
Cable Holder
Screw

11 Remove the screw attaching the Right Giuide Flange.

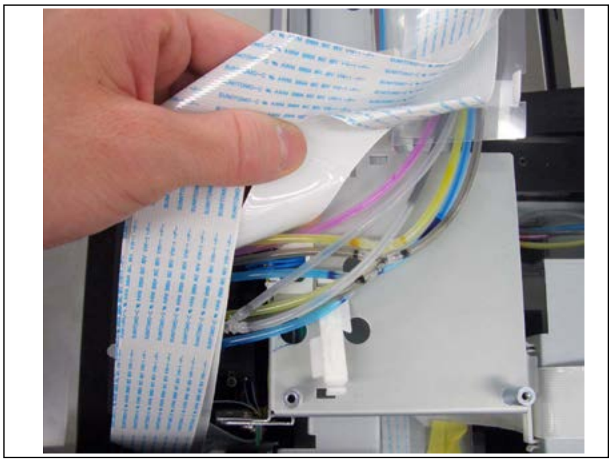


12 Move the Right and Left Giuide Flanges inward and remove the four screws attaching the Rear Apron.
Then, remove the Rear Apron.

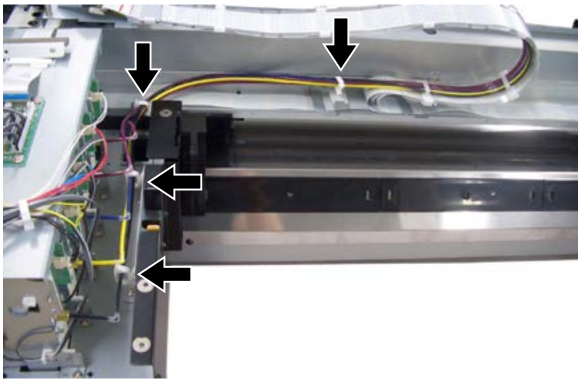


13 Turn the Ribbon Cables and the Ink Tubes and remove the Ink Tube from the Y Joint at the Head Carriage side.

Ink could leak from the Ink Tube.

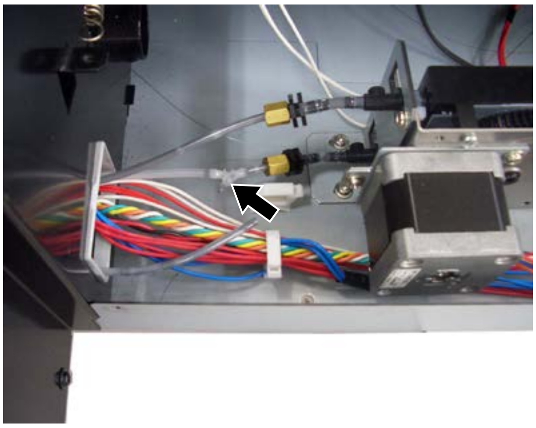


14 Open the Wire Saddles shown in the figure and remove the Ink Tubes from the Wire Saddles.

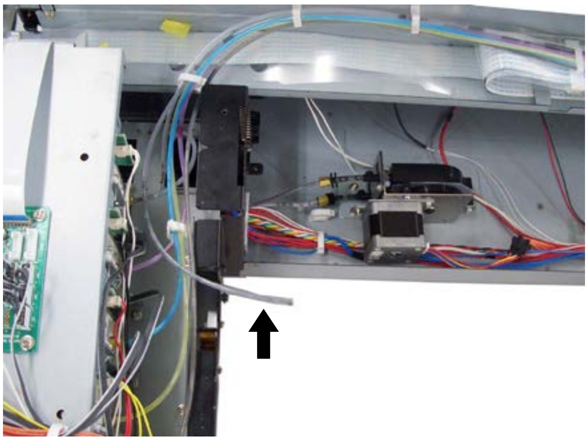


15 Remove the Ink Tube from the Y Joint of the Circulating Pump.

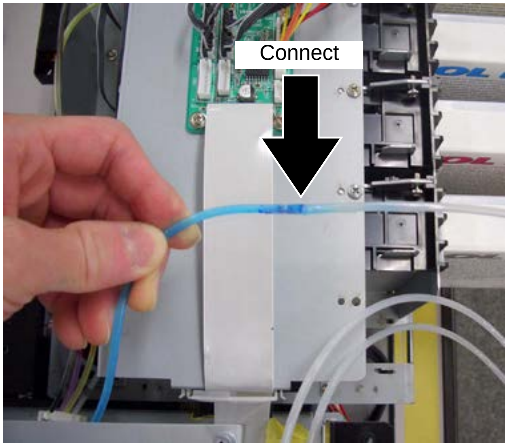
The ink could leak from the Y Joint. Place the cloth under the Y Joint.



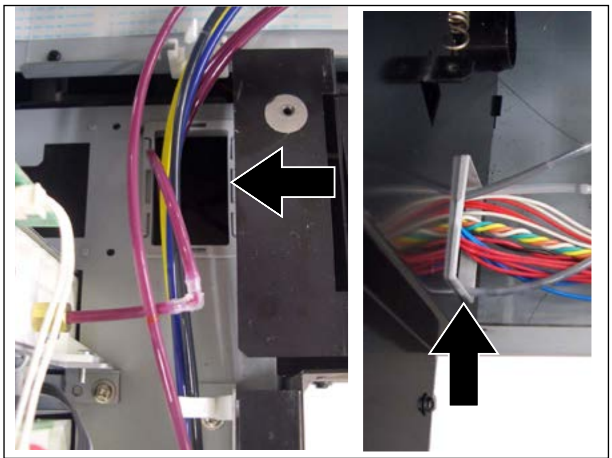
16 Pull the removed Ink Tube toward the Ink Cartridge side.



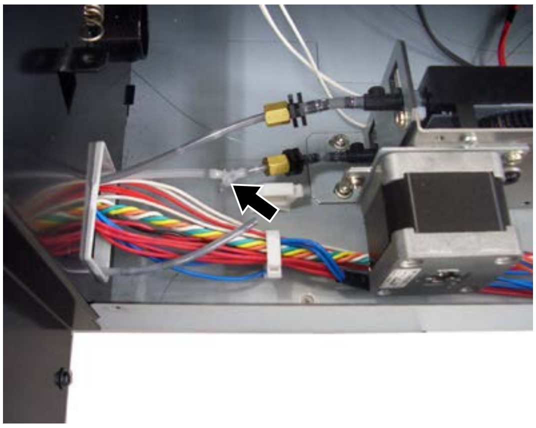
17 Connect the removed Ink Tube at the Ink Cartridge side to the new Ink Tube with the clear tape.



18 Insert the Ink Tube through the hole shown in the figure and put the Ink Tube to the Circulating Pump side.



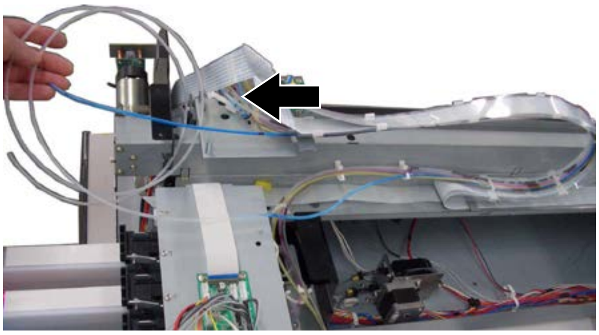
19 Connect the new Ink Tube to the Y Joint of the Circulating Pump.



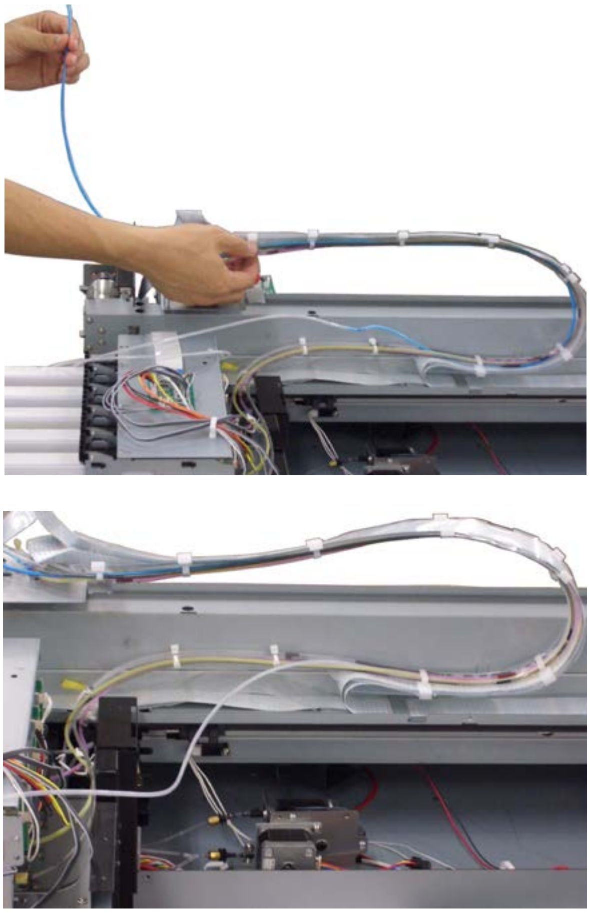
20 Pull the Ink Tube unitil the connected part of the new Ink Tube reaches to the Y Joint at the Head Carriage side.

It is easier to pull the Ink Tube toward the Head Carriage.

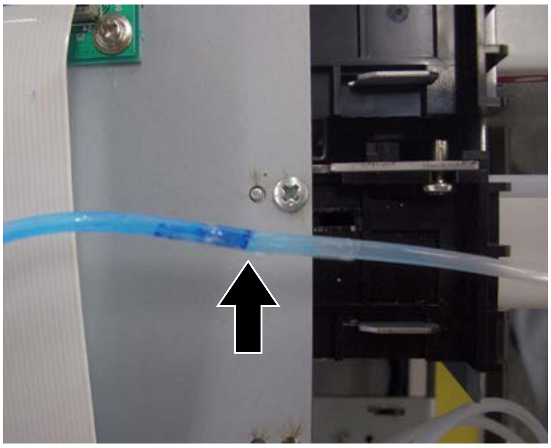
Ink could leak from the Ink Tube.



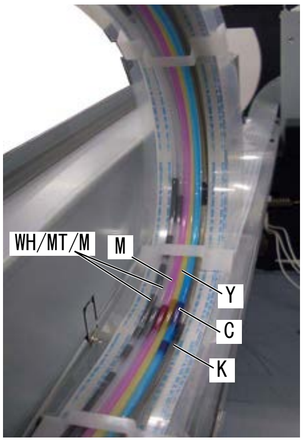
You can pull the Ink Tube easlily with holding the Tube Guide.



21 Connect the removed Ink Tube at the Ink Cartridge side to the new Ink Tube with the clear tape.

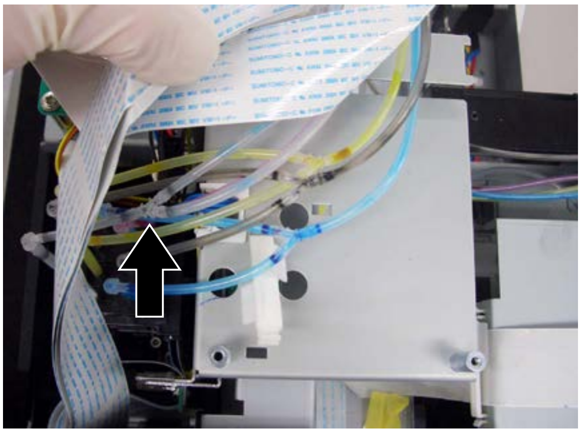


22 Check whether the Ink Tubes are attached in order shown in the figure.

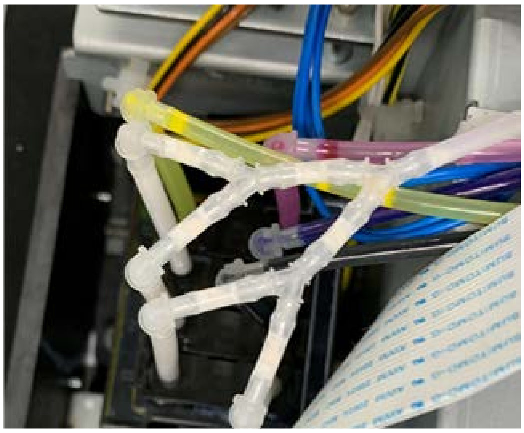


23 Turn the Ribbon Cables and the Ink Tubes and connect the new Ink Tube to Y Joint at the Head Carriage side.

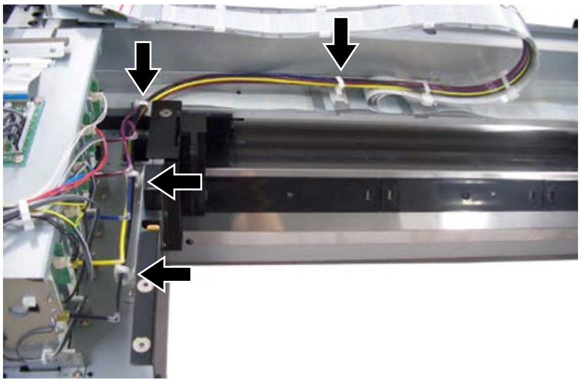
BN-20



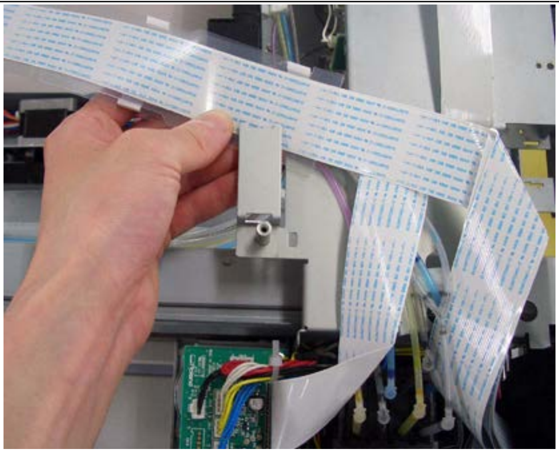
BN-20D



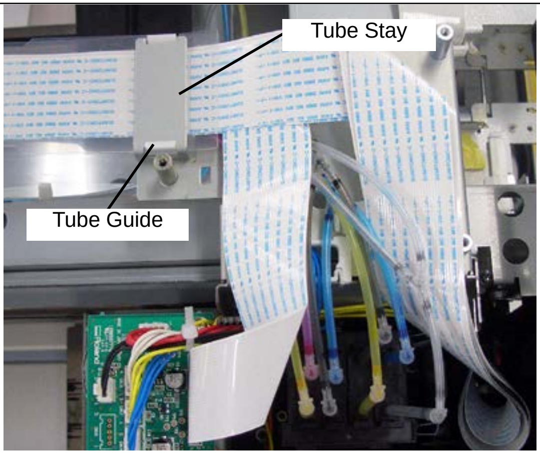
24 Put the Ink Tubes in the Wire Saddles shown in the figure and close the Wire Saddles.



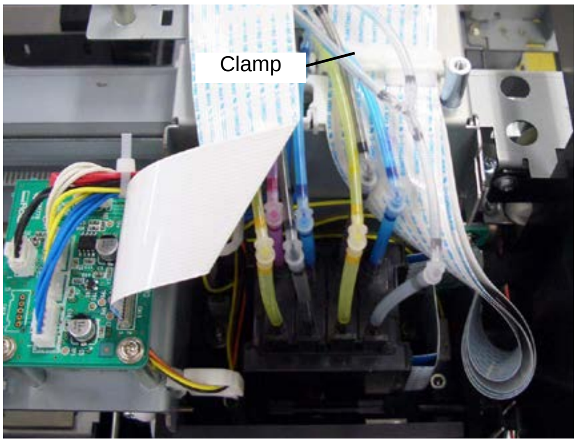
25 Put the Ink Tubes in the Wire Saddles shown in the figure and close the Wire Saddles.



26 Attach the Tube Guide shown in the figure to the Tube Stay.

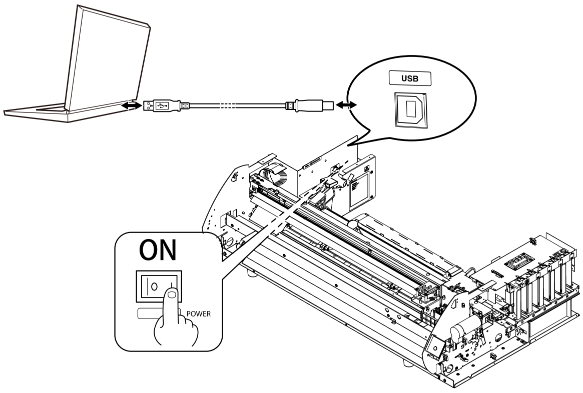


27 Close the Clamp which attaches the Ribbon Cables of the Head.

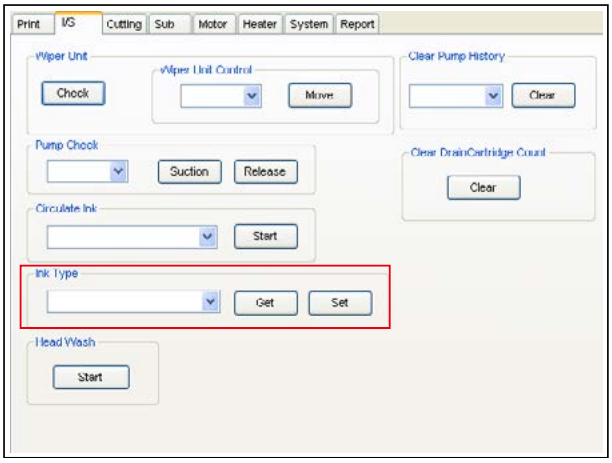


28 Turn on the Main Power SW and connect the printer to the PC by the USB cable.

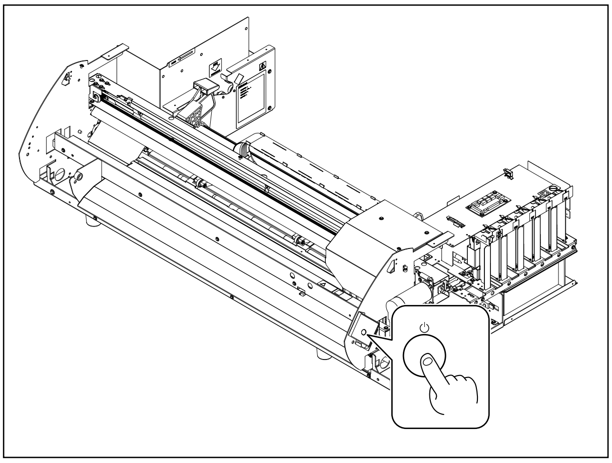
In this procedure, Ink Fill is performed without using the Cleaning Ink Cartridges. If you would like to clean the ink line with cleaning liquid, turn on the Sub Power SW at this step and perform Fill Ink which is done at the machine installation.



29 Start up the Service Application.
Select the Ink Type in [I/S]>[Ink Type] and click [Set].

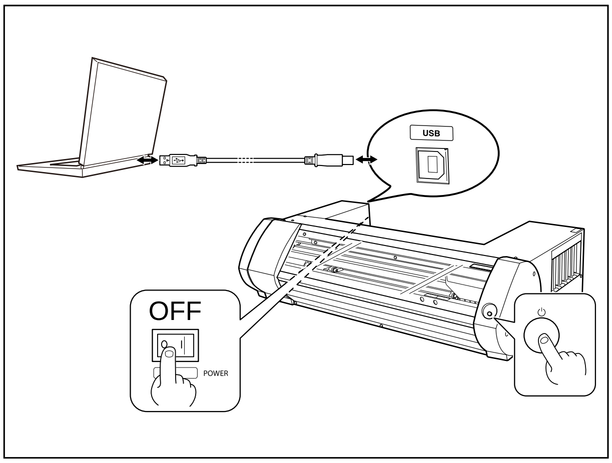

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Wiper Unit
Check
Wiper Unit Control
Move
Clear Pump History
Clear
Pump Check
Suction
Release
Clear DrainCartridge Count
Clear
Circulate Ink
Start
Ink Type
Get
Set
Head Wash
Start

30 Turn on the Sub Power SW.
Perform the Fill Ink with following the wizard on the PC.



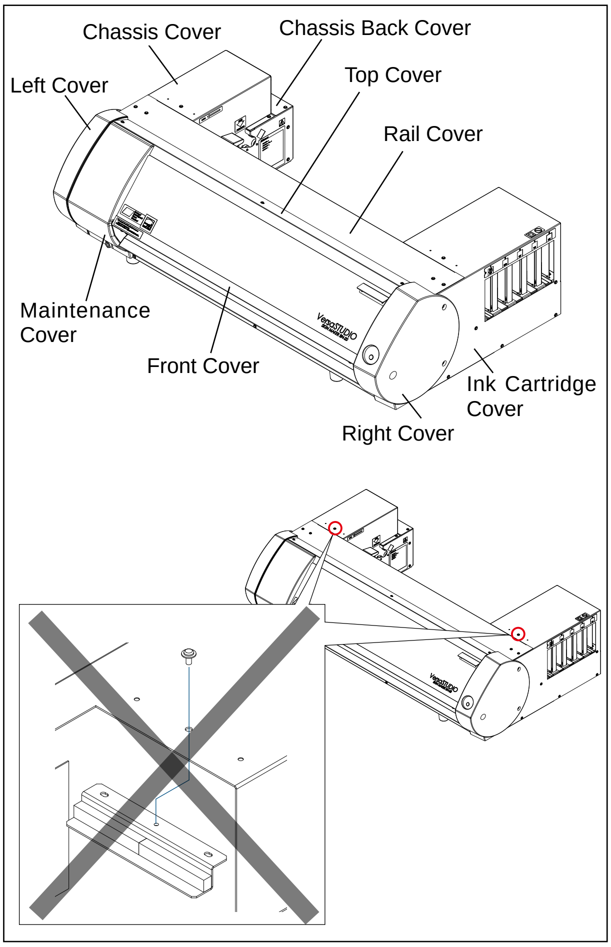
3-17 RIBBON CABLE BETWEEN MAIN BOARD AND HEAD REPLACEMENT ⚠20

1 Turn off the Sub Power SW, and then turn off the Main Power SW. Then, disconnect the USB cable.


USB
OFF
POWER

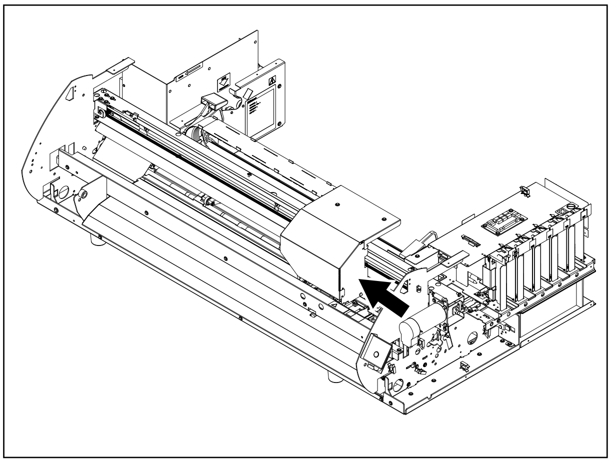
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

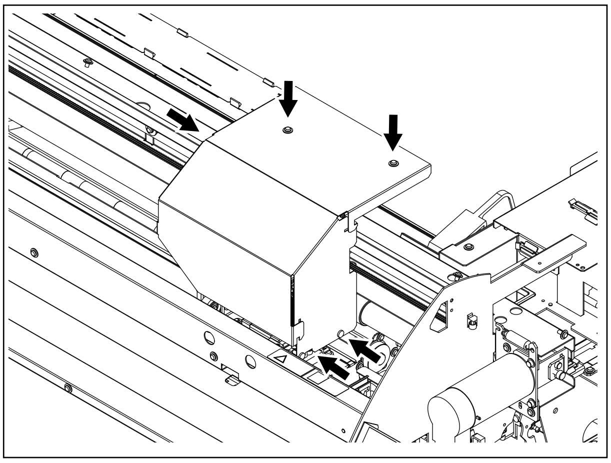

Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

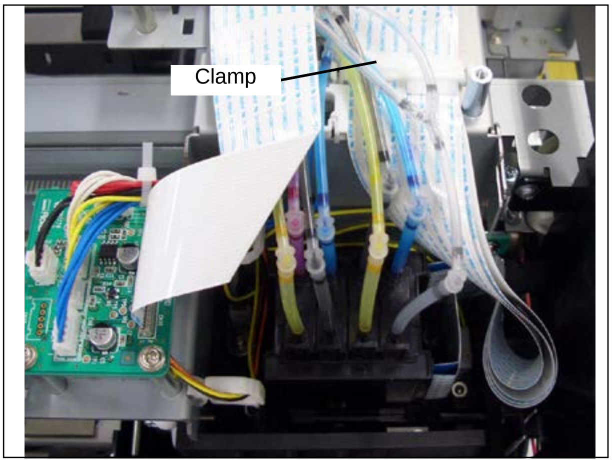
3 Move the Head Carriage on the Bed.



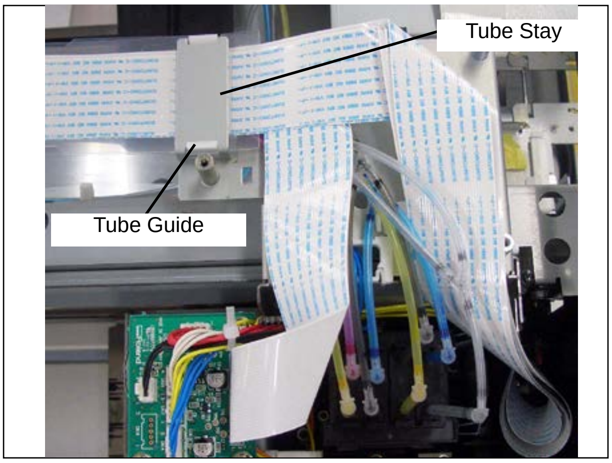
4 Remove the Head Carriage Cover.



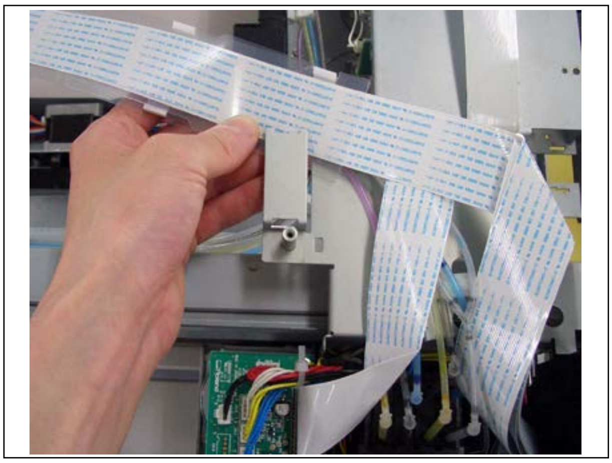
5 Open the Clamp which attaches the Ribbon Cables of the Head.



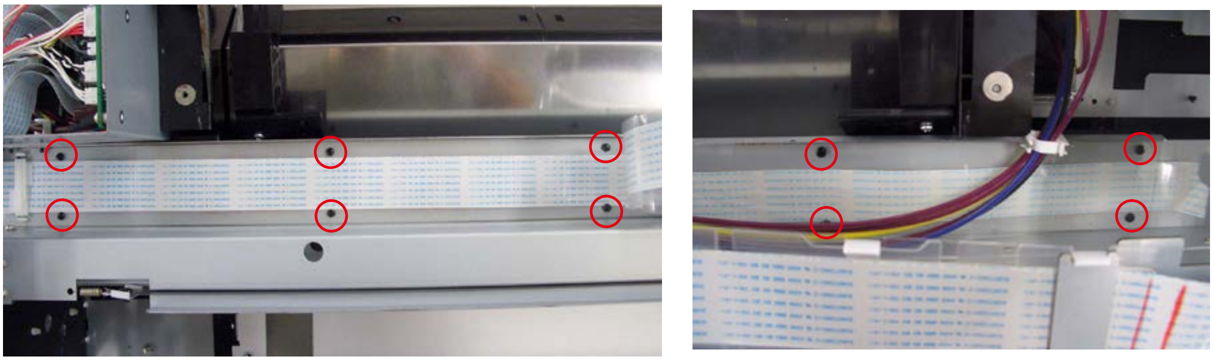
6 Remove the Tube Guide shown in the figure from the Tube Stay.


Tube Stay
Tube Guide

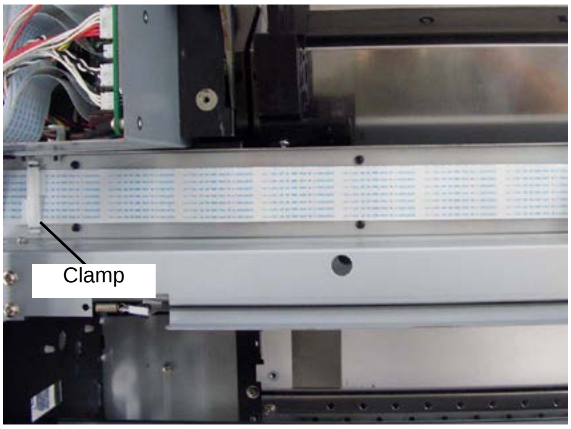
7 Put the Ribbon Cables and the Ink Tubes on the Tube Stay.



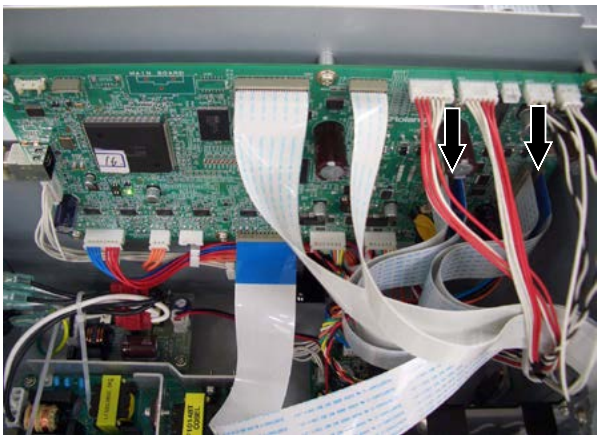
8 Remove the Rivets which attaches the Cable Holder and the Guide Rail.



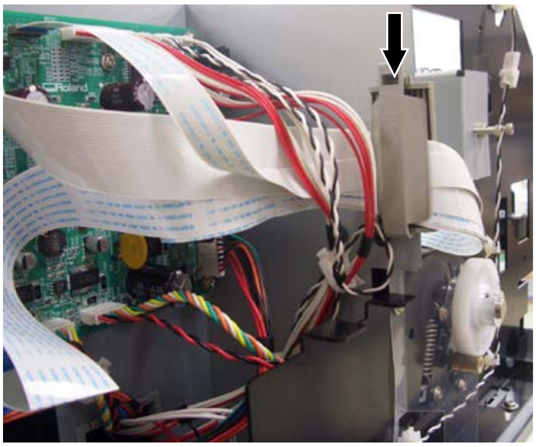
9 Open the Cable Clamp.



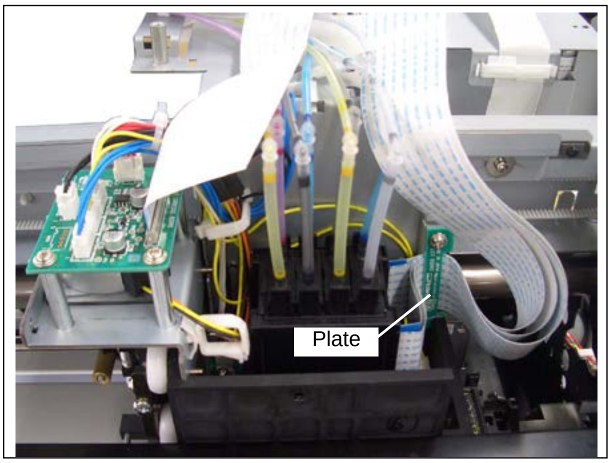
10 Remove the Ribbon Cable from the Main Board.



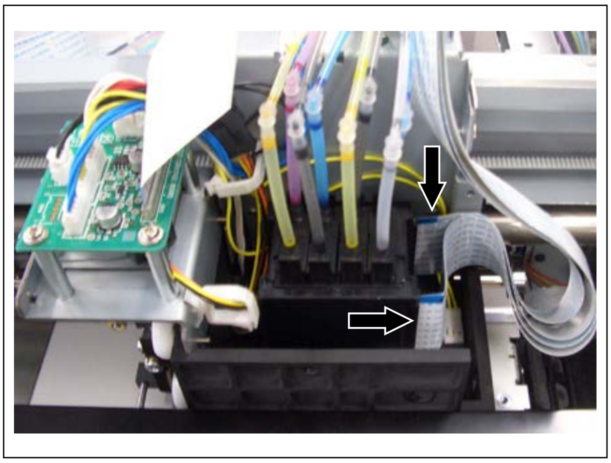
11 Open the Clamp shown in the figure attaching the Ribbon Cable.



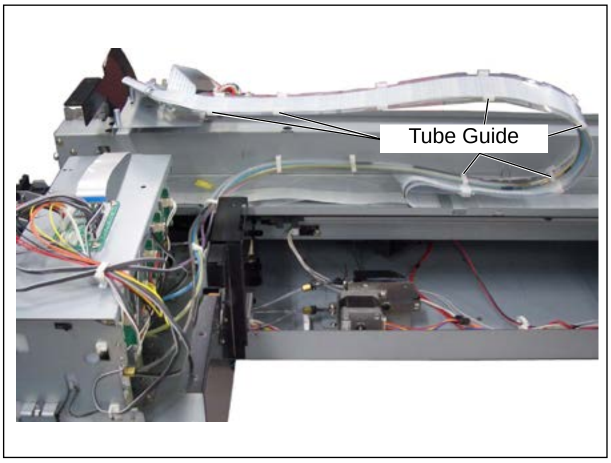
12 Remove the Plate which attaches the ribbon cables to the Head.



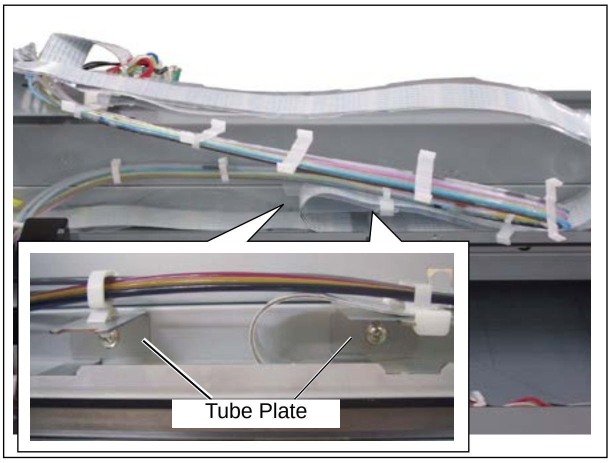
13 Remove the Ribbon Cable from the Head.



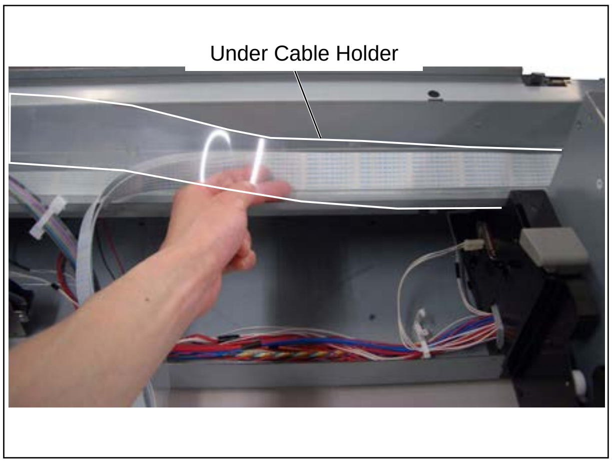
14 Remove the Tube Guides from the Cable Guides



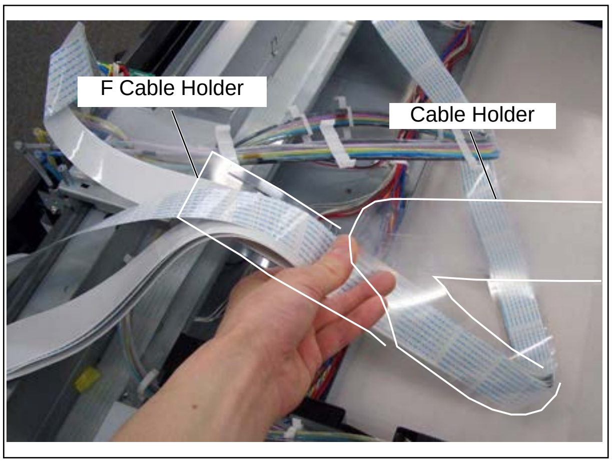
15 Remove the Tube Guides from the Tube Plates shown in the figure. Then, remove the Tube Plates



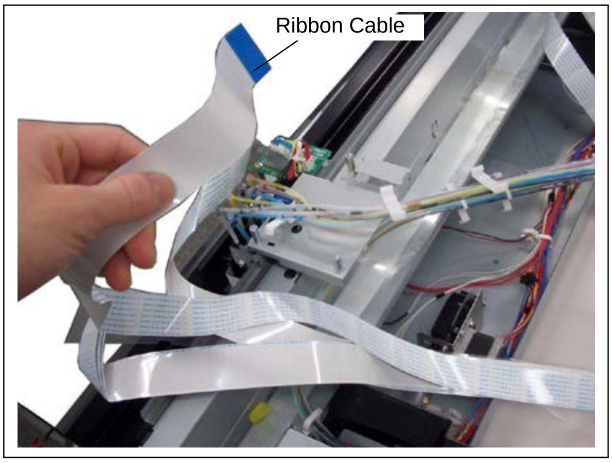
16 Remove the Under Cable Holder on the Guide Rail.


Under Cable Holder

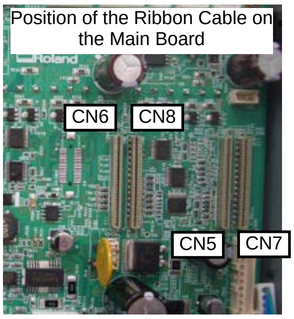
17 Remove the F Cable Holder from the Cable Holder.


F Cable Holder
Cable Holder

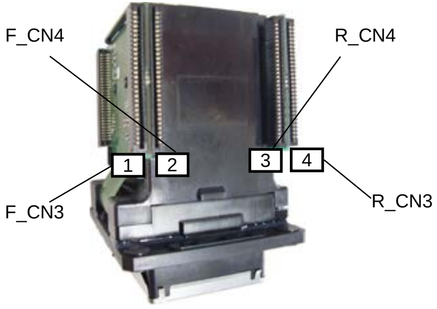
18 Take out the Ribbon Cable.


Ribbon Cable

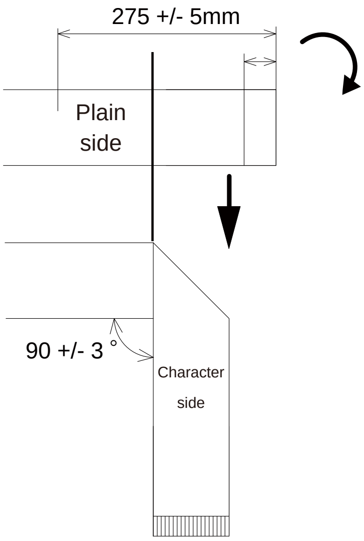
19 Fold the new Ribbon Cable by referring the figure below. The position to fold the Ribbon Cable is different depending on the position to fix the Ribbon Cable to the Carriage Board.


Position of the Ribbon Cable on the Main Board
CN6
CN8
CN5
CN7

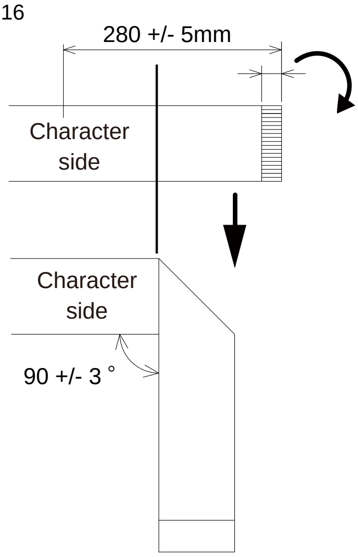
Connector Number of the Head


F_CN4
R_CN4
1
2
3
4
F_CN3
R_CN3

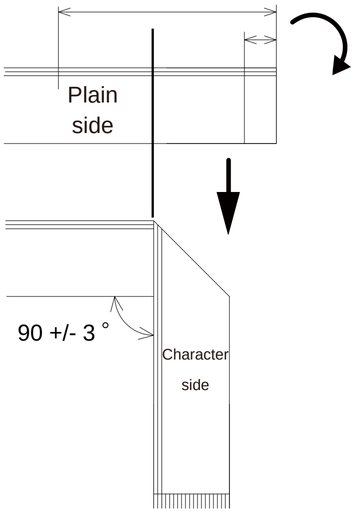
1. CN7 on the Main Board - F_CN3 Connector of the Head
   1000007717 CABLE-CARD,29P1 1750L BB HIGH-V


275 +/- 5mm
Plain side
90 +/- 3 °
Character side

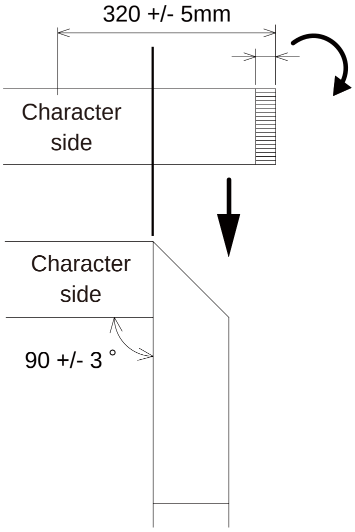
2. CN5 on the Main Board - F_CN4 Connector of the Head
   ~~1000007717~~ CABLE-CARD,28P1 1750L BB HIGH-V
   1000007716


280 +/- 5mm
Character side
Character side
90 +/- 3 °

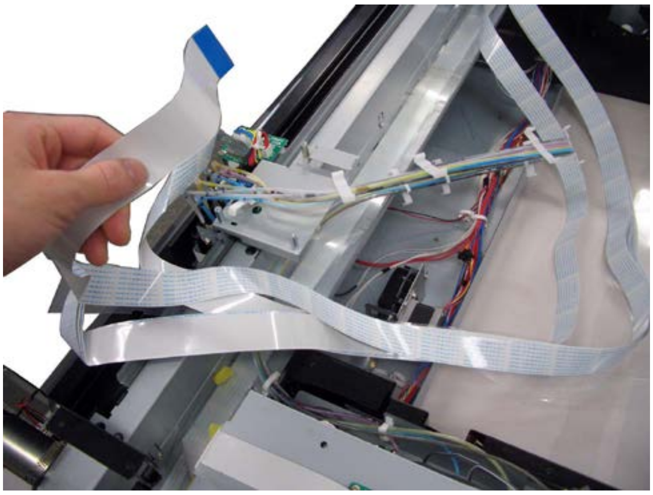
3. CN8 on the Main Board - R_CN4 Connector of the Head
   ~~1000007716~~ CABLE-CARD,29P1 1750L BB HIGH-V
   1000007717

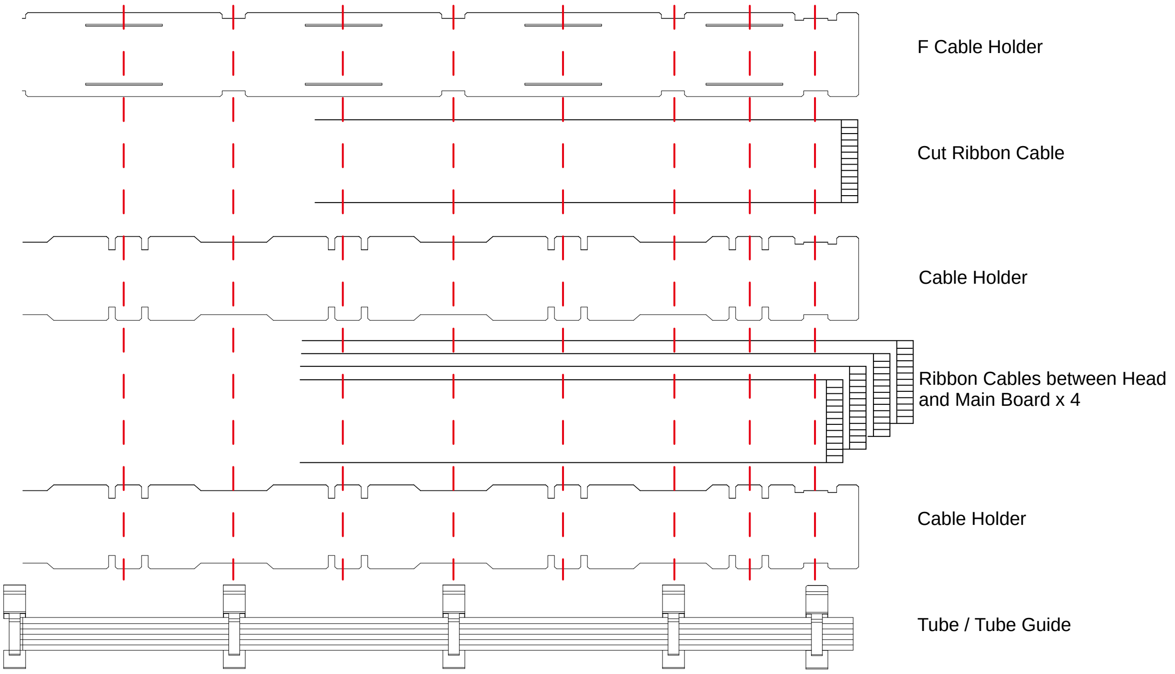

315 +/- 5mm
Plain side
90 +/- 3 °
Character side

4. CN6 on the Main Board - R_CN3 Connector of the Head
   1000007717 CABLE-CARD,29P1 1750L BB HIGH-V

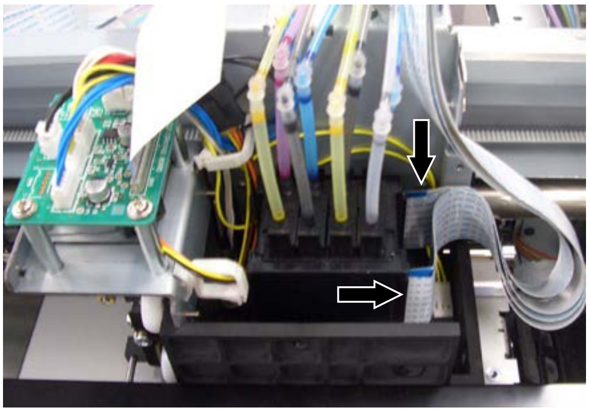

320 +/- 5mm
Character side
Character side
90 +/- 3 °

20 The F Cable Holder, the Cut Ribbon Cable, the Cable Holders, the Ribbon Cables, the Cable Holders, the Ink Tubes and the Tube Guides are attached shown in the figure. Check the position of each parts and attach the new Ribbon Cable by referring the following figures.

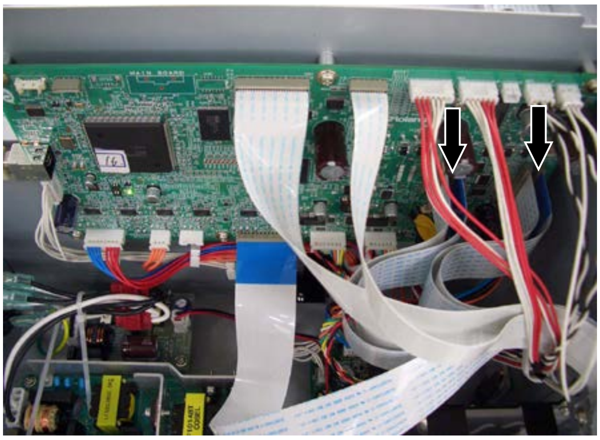



F Cable Holder
Cut Ribbon Cable
Cable Holder
Ribbon Cables between Head and Main Board x 4
Cable Holder
Tube / Tube Guide

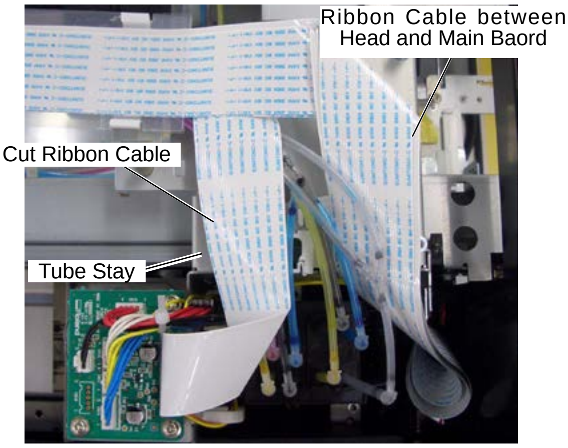
21 Connect the Ribbon Cable to the Head.



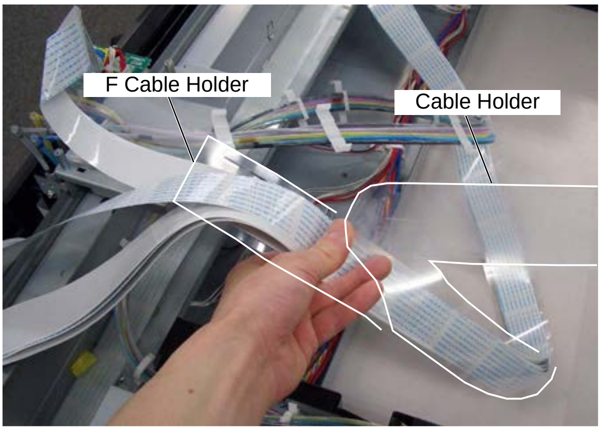
22 Connect the Ribbon Cable to the Main Board.



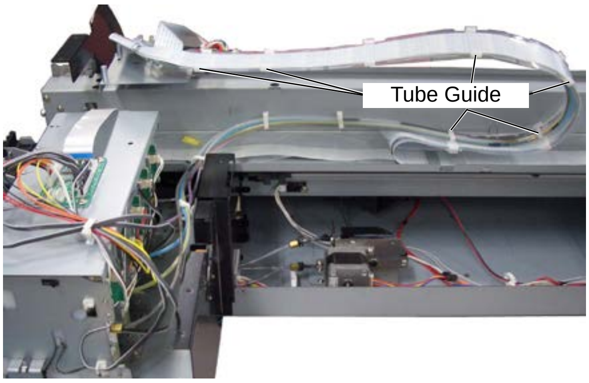
23 Place the Cut Ribbon Cable and the Ribbon Cable between the Head and the Main Board on the Tube Stay as shown in the figure.


Ribbon Cable between Head and Main Baord
Cut Ribbon Cable
Tube Stay

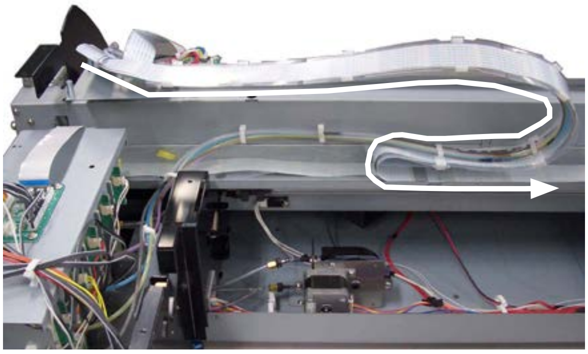
24 Attach the Cable Holder to the F Cable Holder.


F Cable Holder
Cable Holder

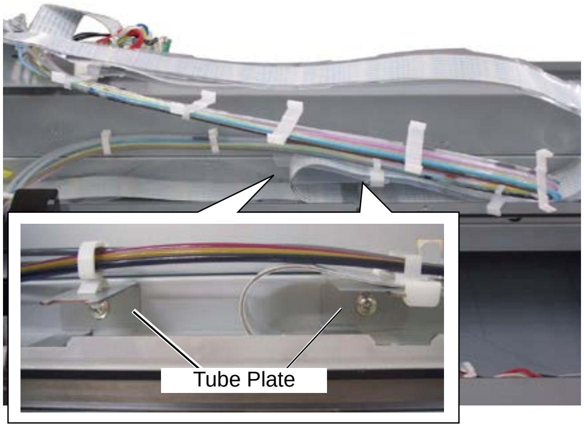
25 Attach the Tube Guides to the Cable Holders.



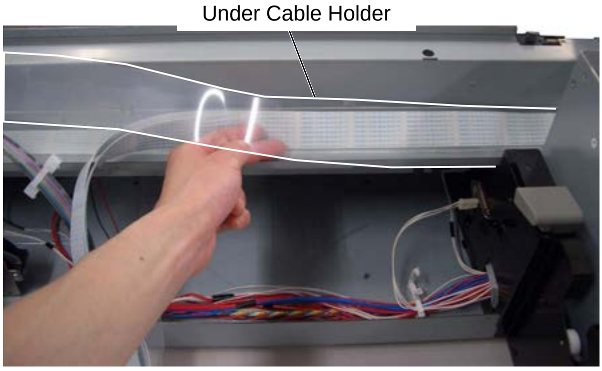
26 Place the Ribbon Cables by bending as shown in the figure.



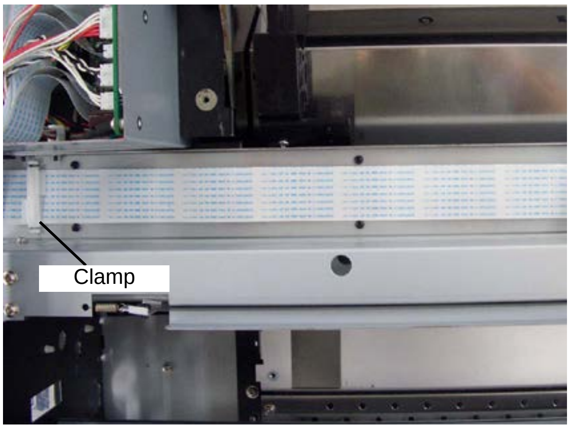
Attach the Cable Guides to the Tube Plates.
Then, attach the Tube Plates to the Guide Rail.



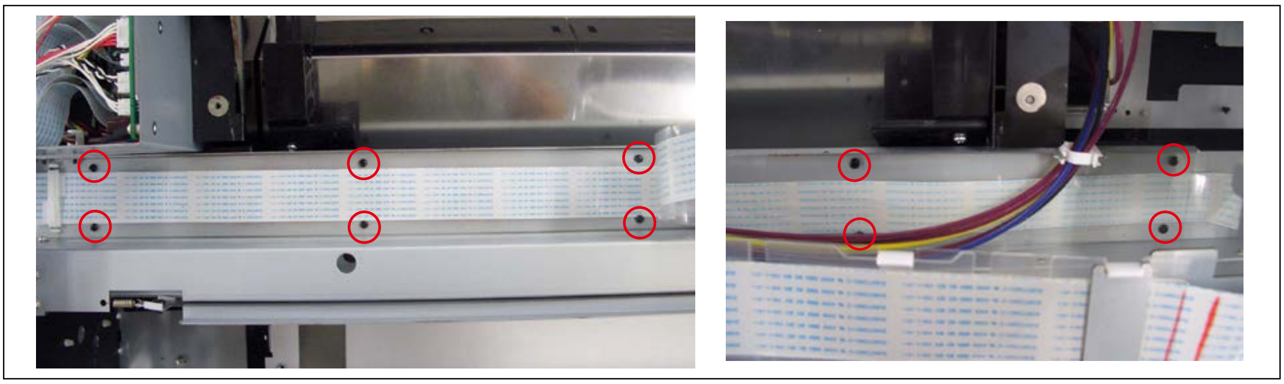
27 Attach the Under Cable Holder to the Guide Rail.


Under Cable Holder

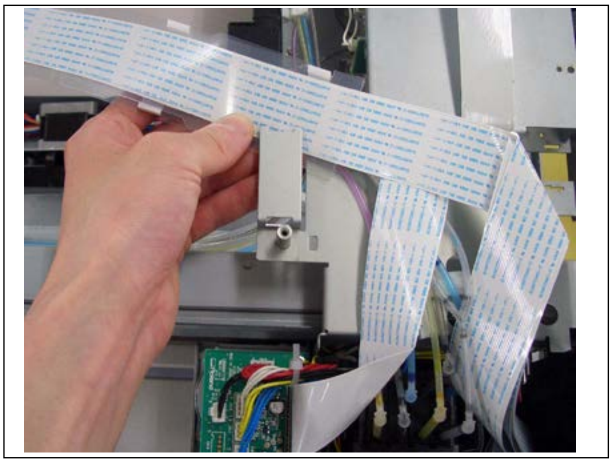
28 Close the Clamp shown in the figure to hold the Ribbon Cable.



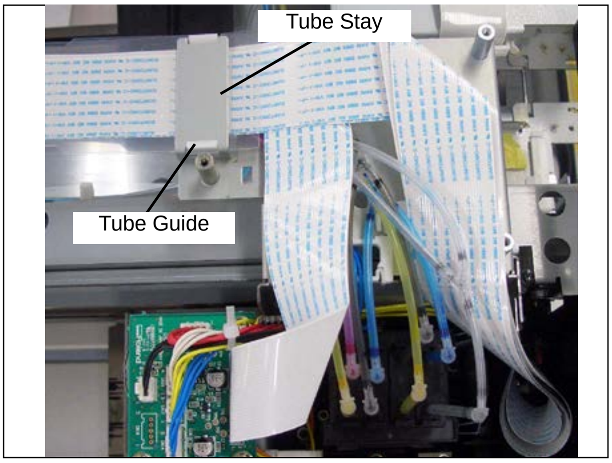
29 Attach the Rivets which attaches the Cable Holder and the Guide Rail.



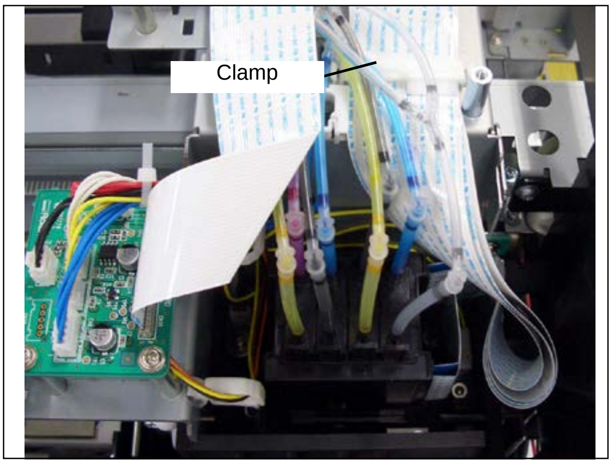
30 Put the Ink Tubes in the Wire Saddles shown in the figure and close the Wire Saddles.



31 Attach the Tube Guide shown in the figure to the Tube Stay.

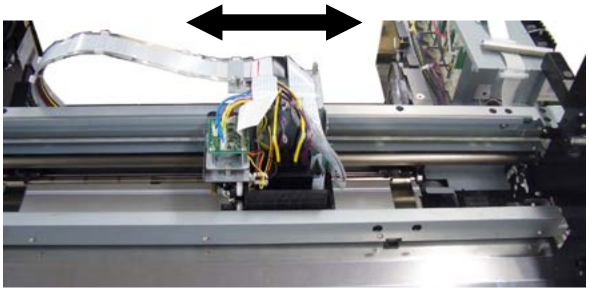


32 Close the Clamp which attaches the Ribbon Cables of the Head.



33 Move the Head Carriage in a whole width of the machine manually to check that the Ribbon Cables, the Tube Guides and the Cable Holders make the abnormal noise.

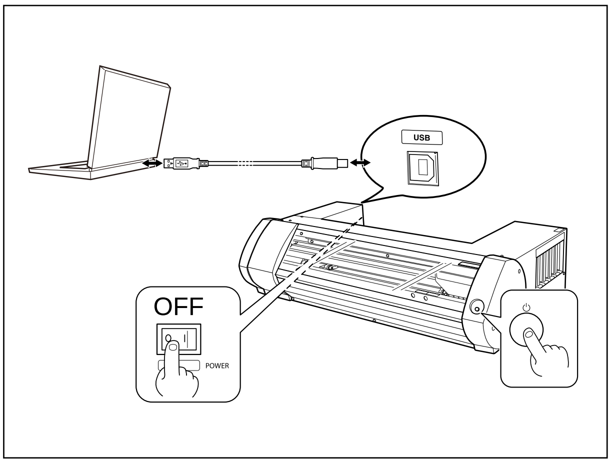
When you can hear the abnormal noise, check that the Ribbon Cables, the Tube Guides and the Cable Holders are attached correctly.



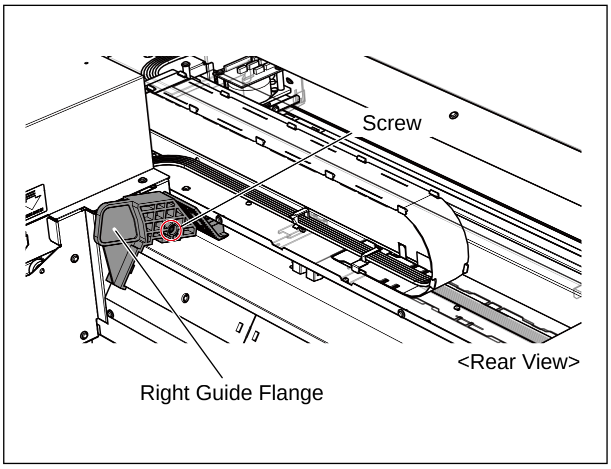
Revised 4

3-18 GUIDE FLANGE REPLACEMENT

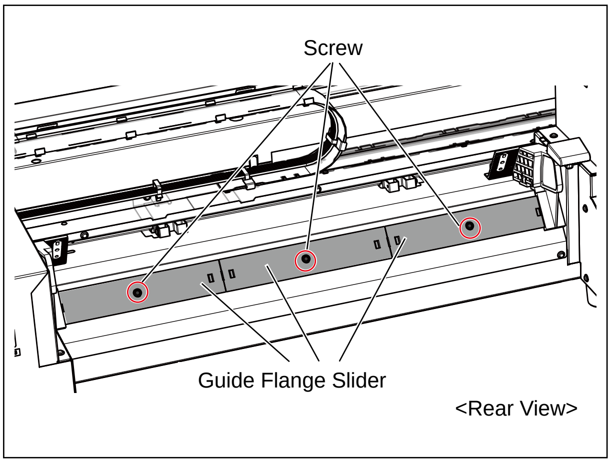
1 Turn off the sub power SW and main power SW.
Disconnect the USB Cable.


USB
OFF
POWER

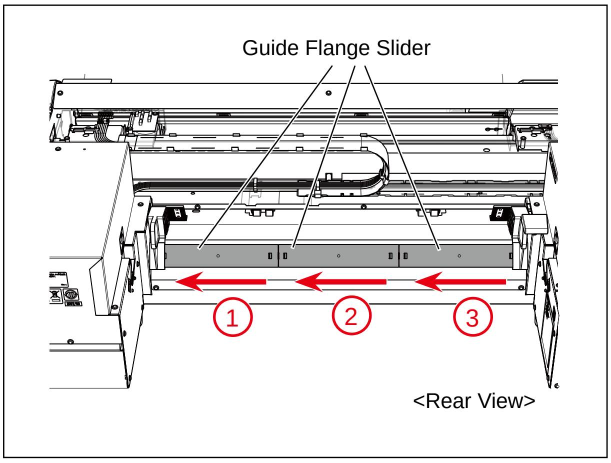
2 Remove the screw fixing the Right Guide Flange.


Screw
<Rear View>
Right Guide Flange

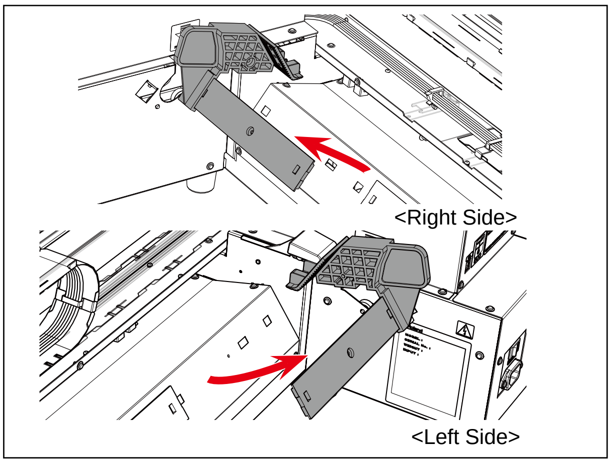
3 Remove the 3 screws fixing the Guide Flange Sliders.


Screw
Guide Flange Slider
<Rear View>

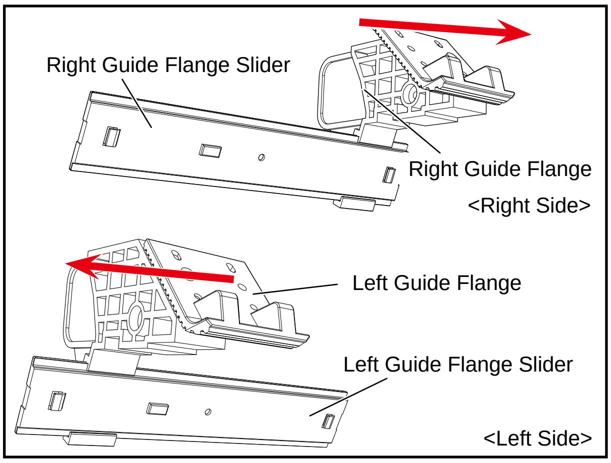
4 Slide the 3 Guide Flange Sliders in order as shown in the figure.


Guide Flange Slider
①
②
③
<Rear View>

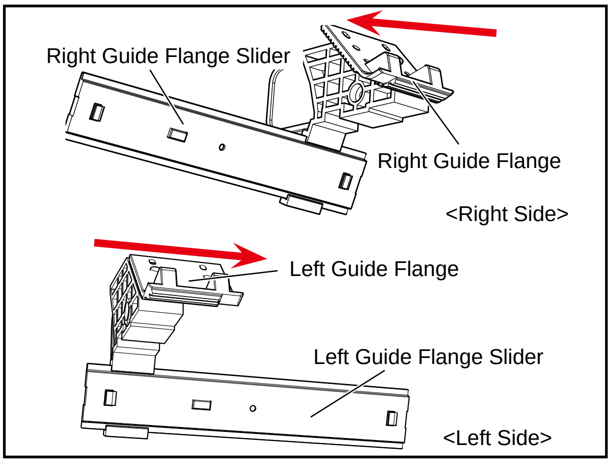
5 Remove the Guide Flanges together with the right and left Guide Flange Sliders.



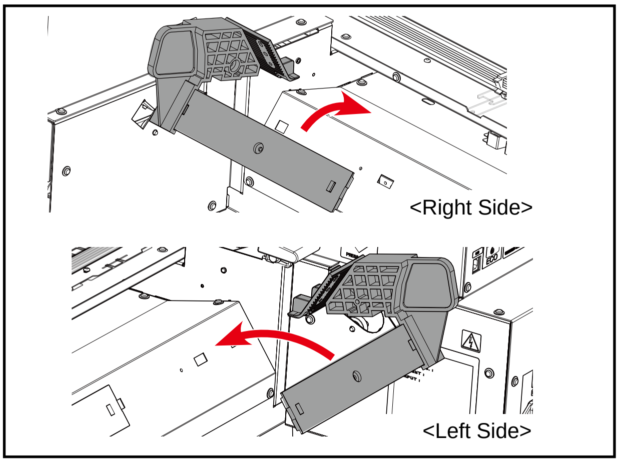
6 Slide the Guide Flanges to remove them from the Guide Flange Sliders.


Right Guide Flange Slider
Right Guide Flange
<Right Side>
Left Guide Flange
Left Guide Flange Slider
<Left Side>

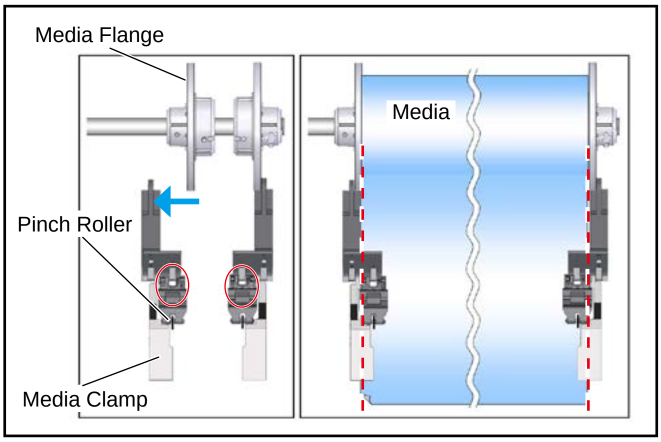
7 Fix new Guide Flanges to the Guide Flange Sliders.


Right Guide Flange Slider
Right Guide Flange
<Right Side>
Left Guide Flange
Left Guide Flange Slider
<Left Side>

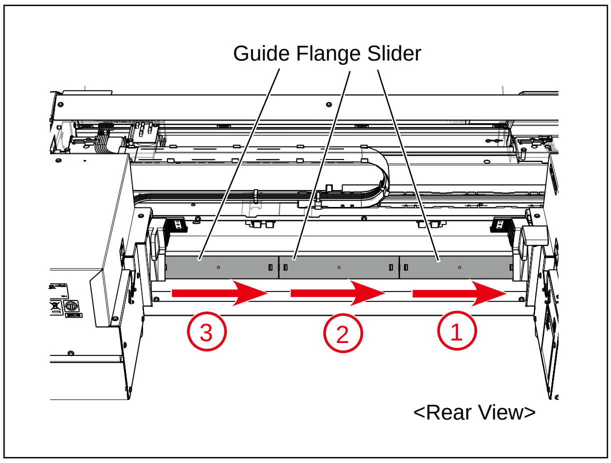
8 Fix the Guide Flanges together with the Guide Flange Sliders.



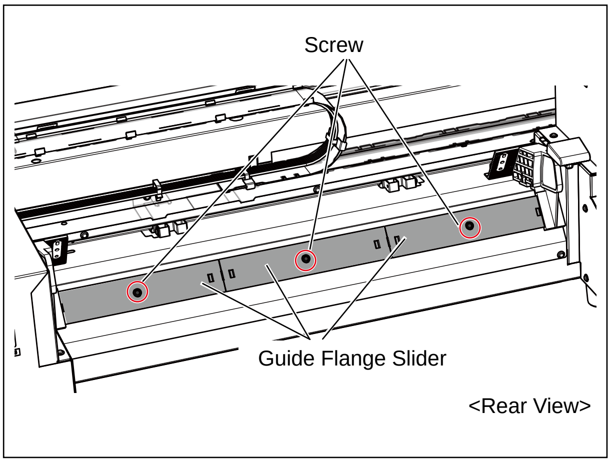
Be sure that the Guide Flanges are placed outside of the media clamps.
The media clamps should always be positioned at the edges of the media.


Media Flange
Media
Pinch Roller
Media Clamp

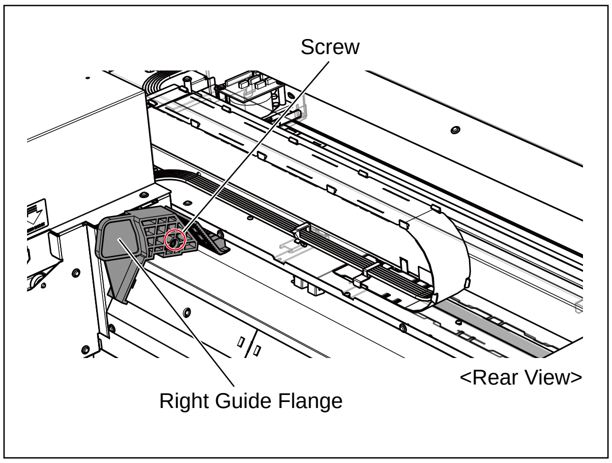
9 Slide the 3 Guide Flange Sliders in order as shown in the figure.


Guide Flange Slider
③
②
①
<Rear View>

10 Fix the 3 screws fixing the Guide Flange Sliders.


Screw
Guide Flange Slider
<Rear View>

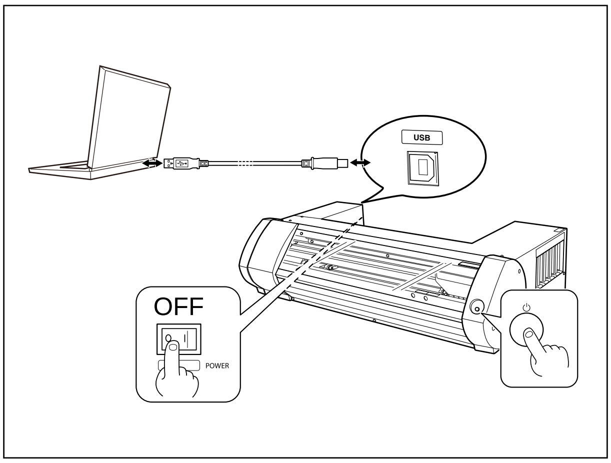
11 Fix the screw to fix the Right Guide Flange.


Screw
<Rear View>
Right Guide Flange

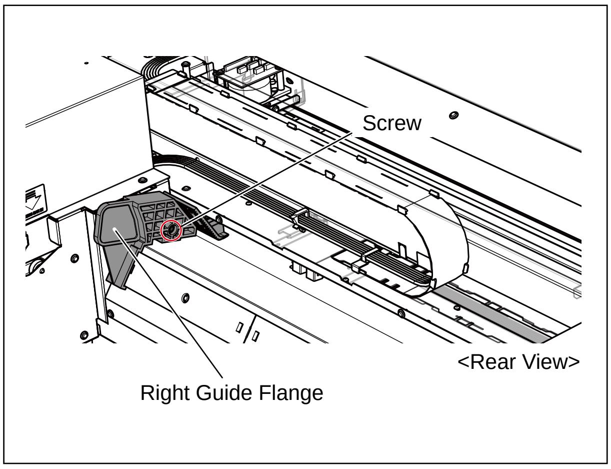
Revised 5

3-19 MEDIA CLAMP REPLACEMENT

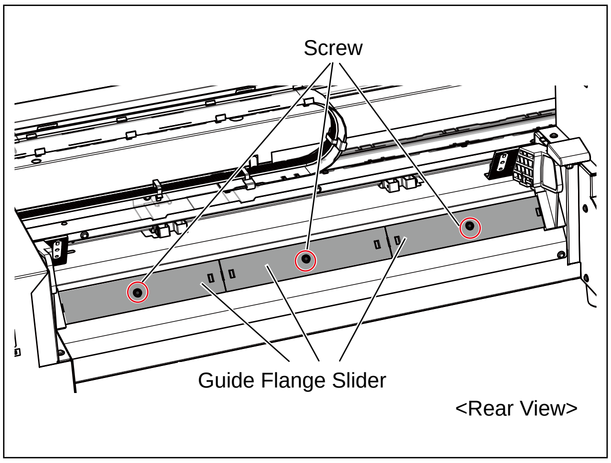
1 Turn off the sub power SW and main power SW.
Disconnect the USB Cable.


USB
OFF
POWER

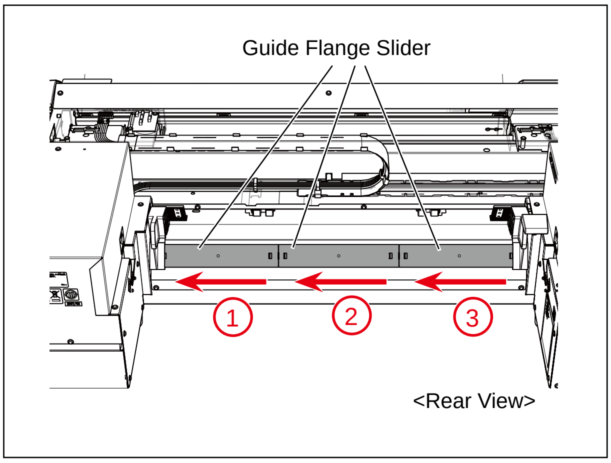
2 Remove the screw fixing the Right Guide Flange.


Screw
<Rear View>
Right Guide Flange

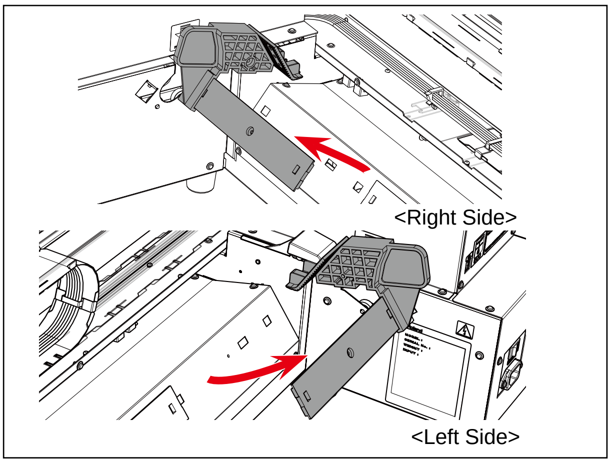
3 Remove the 3 screws fixing the Guide Flange Sliders.


Screw
Guide Flange Slider
<Rear View>

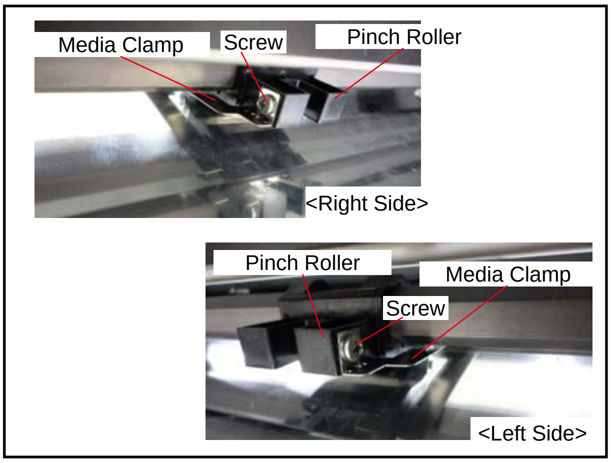
4 Slide the 3 Guide Flange Sliders in order as shown in the figure.


Guide Flange Slider
①
②
③
<Rear View>

5 Remove the Guide Flanges together with the right and left Guide Flange Sliders.

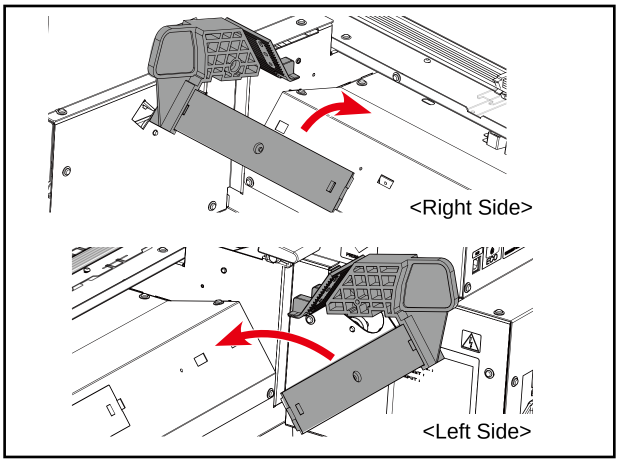


6 Remove the screw shown in the figure to remove the Media Clamp from the Pinch Roller.
Then fix the new Media Clamp to the Pinch Roller.

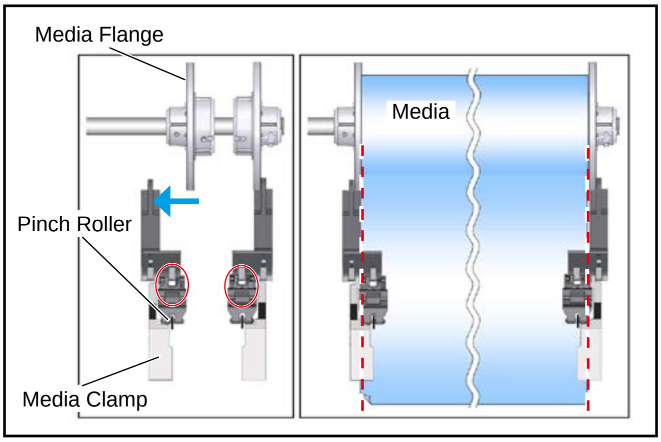

Media Clamp
Screw
Pinch Roller
<Right Side>
Pinch Roller
Media Clamp
Screw
<Left Side>

Use the thin driver to access the screw easier.

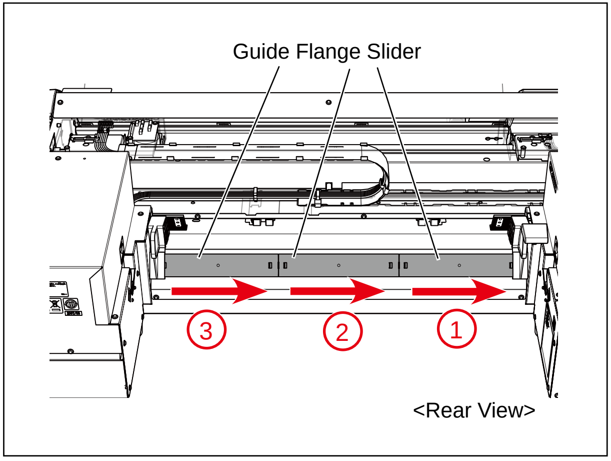
7 Fix the Guide Flanges together with the Guide Flange Sliders.



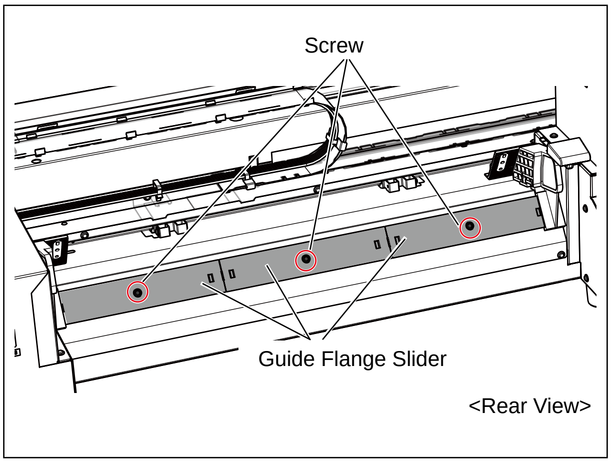
Be sure that the Guide Flanges are placed outside of the media clamps.
The media clamps should always be positioned at the edges of the media.


Media Flange
Pinch Roller
Media Clamp
Media

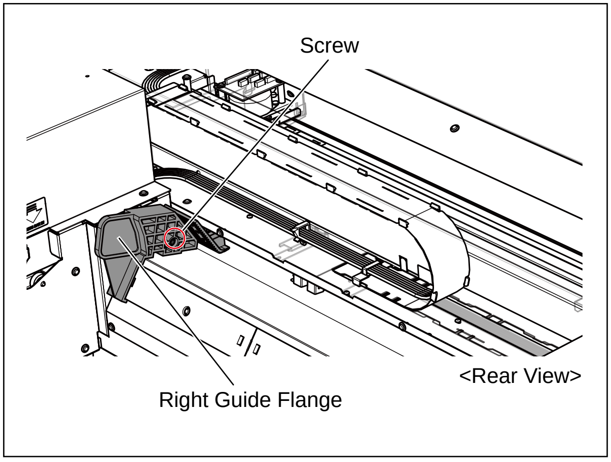
8 Slide the 3 Guide Flange Sliders in order as shown in the figure.


Guide Flange Slider
③
②
①
<Rear View>

9 Fix the 3 screws fixing the Guide Flange Sliders.


Screw
Guide Flange Slider
<Rear View>

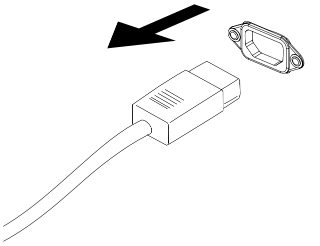
10 Fix the screw to fix the Right Guide Flange.

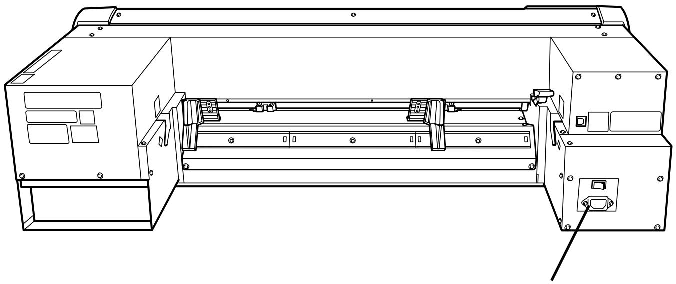

Screw
<Rear View>
Right Guide Flange

To Ensure safe Work

⚠WARNING

Turn off the Sub Power SW, Main Power SW, and unplug the power cable of the Printer and deodorization equipment before performing parts replacement.
Performing the parts replacement while the power turned on may result in injury by unintended operation of the printer.





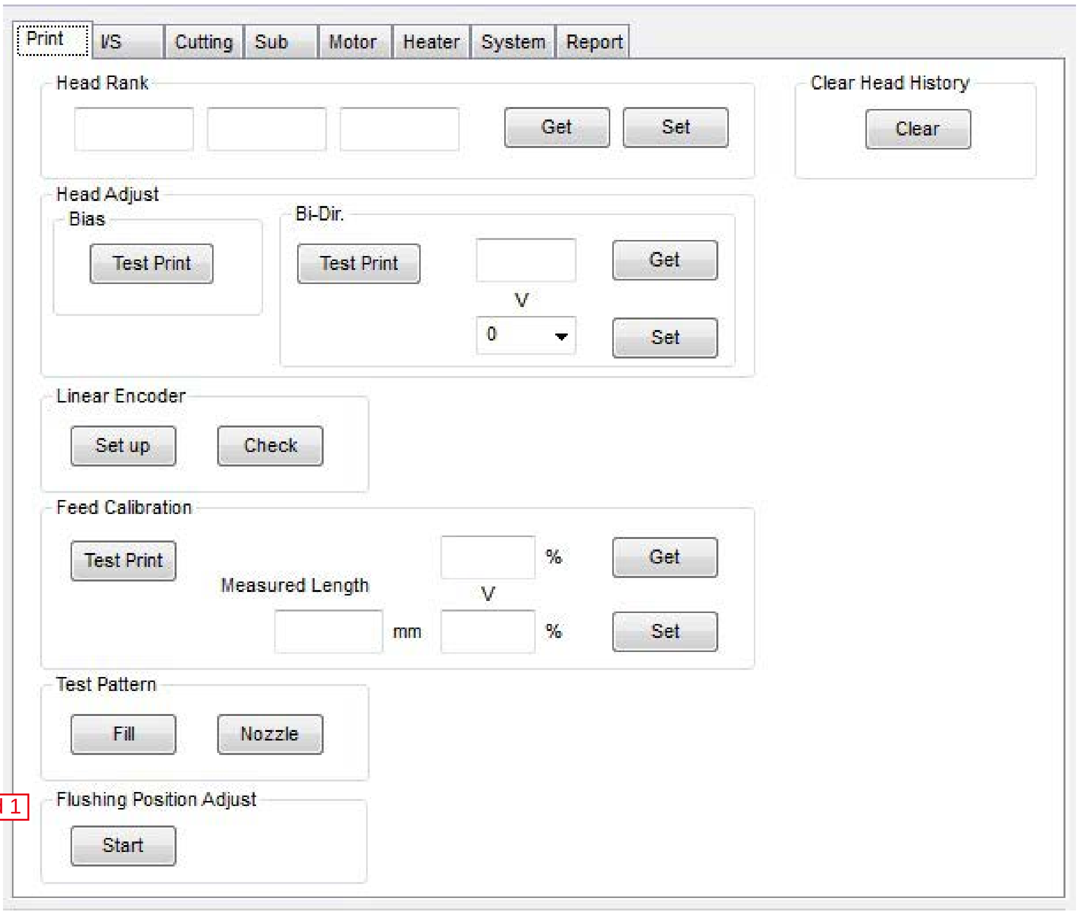
Static electricity can harm some electronic devices. To prevent static damage, discharge static electricity from your body before you touch any of electronic devices. You can do so by touching an unpainted metal surface on the chassis.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive device from its shipping carton, do not remove the device from the antistatic packing material until you are ready to install the device to the printer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive device, place it in an antistatic container or packaging first.
- Handle all sensitive devices in a static-safe area. If possible, use antistatic floor pads and workbench pads.

4-1 SERVICE APPLICATION 22

Print Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
mm
%
V
%
Get
Set
Test Pattern
Fill
Nozzle
Flushing Position Adjust
Start

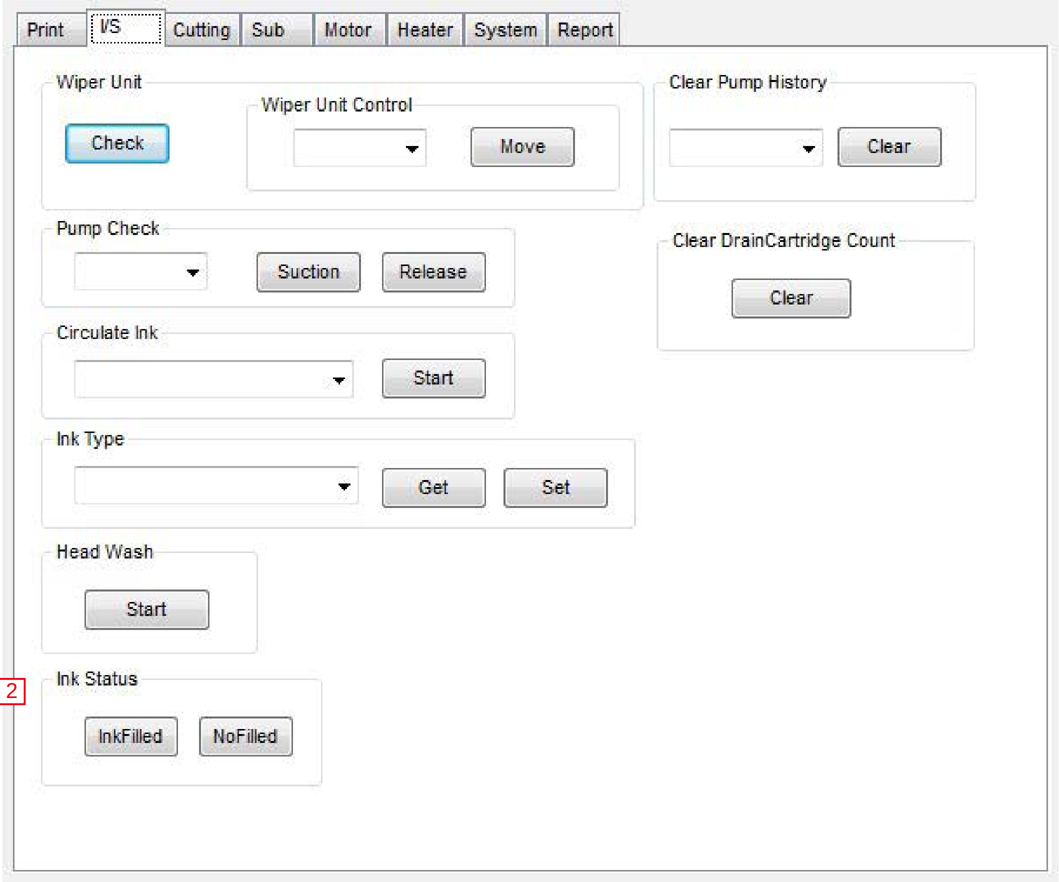
Revised 1

No.	Window name	Function	Button	Contents
1	Head Rank		Get	You can get the Head Rank.
			Set	You can set the Head Rank.
2	Clear Head History		Clear	The shot count, cleaning times, print consumed ink, print page, print time and print area are cleared.
3	Head Adjust	Bias	Test Print	The machine starts to print BIAS test pattern.
		Bi-Dir.	Test Print	The machine starts to print Bi-Direction Factory test pattern.
			Get	The current setting value of Bi-Direction Adjustment is shown.
			Set	You can select a setting value form the list box and set the selected value to the machine.
4	Linear Encoder		Set up	The machine starts to initialize linear encoder setting.
			Check	The machine starts to check if the linear encoder reads a position correctly.
5	Feed Calibration		Test Print	The machine starts to print Feed Calibration Factory test pattern.
		Measured Length	- mm	You can input the measured length in this box.
			Get	The current setting value is shown as percentage unit.
			Set	The adjustment setting value is set to the machine.
6	Test Pattern		Fill	The machine starts to print solid single colors on the entire width of the media.
			Nozzle	The machine starts to print Nozzle Check Test Pattern.
7	Flushing Positon Adjust		Start	You can start the Flushing Position Adjustment. After selecting [Start] button, the operation window is displayed. Regarding how to perform Flushing Position Adjustment, refer to the [4-11 Flushing Position Adjustment].

Revised 1

I/S Tab △25

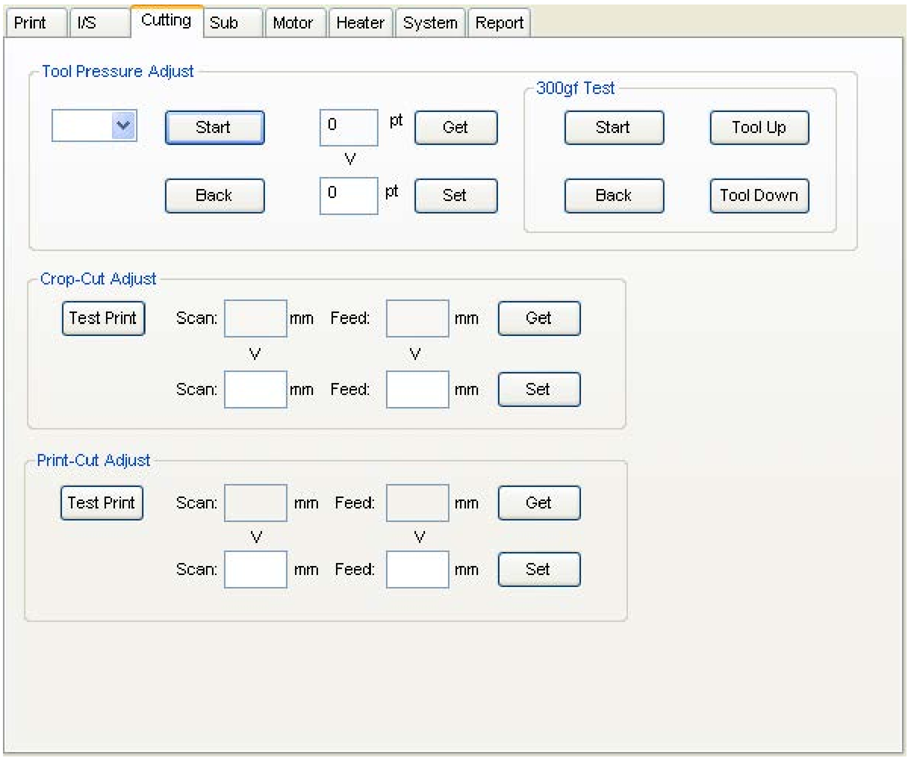
Revised 2


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Wiper Unit
Check
Wiper Unit Control
Move
Clear Pump History
Clear
Pump Check
Suction
Release
Clear DrainCartridge Count
Clear
Circulate Ink
Start
Ink Type
Get
Set
Head Wash
Start
Ink Status
InkFilled
NoFilled

Revised 2

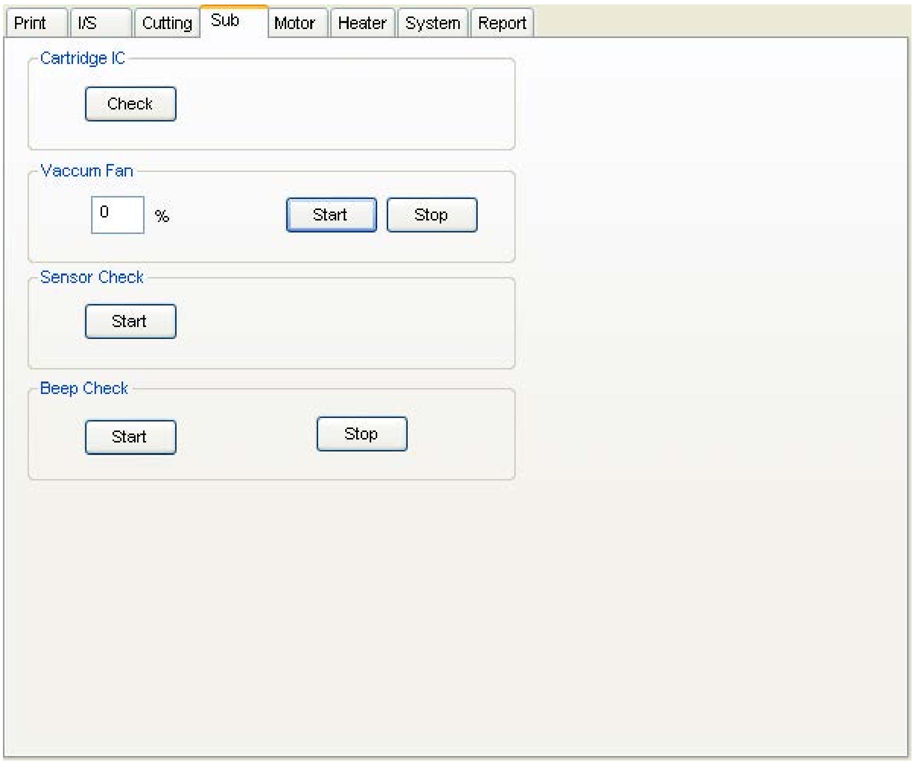
No.	Window name	Function	Button	Contents
1	Wiper Unit		Check	You can check the wiper unit motion. The wiper moves from the position of OFF to the position ON.
		Wiper Unit Control	Move	You can select [Origin], [Felt] or [Wiper] from the list box and move the wiper to the selected position.
2	Clear Pump History		Clear	You can select [Cap Pump] or [Circulation Pump] and clear the history of the selected pump.
3	Pump Check		Suction	You can select [Cap Pump] or [Circulation Pump] and rotate the selected pump to suction the ink.
			Release	You can select [Cap Pump] or [Circulation Pump] and rotate the selected pump to release the pump.
4	Clear DrainCartridge Count		Clear	You can clear the consumed ink history of the drain cartridge.
5	Circulate Ink		Start	You can select [Circulation] or [Circulation+Discharge] and perform circulation.
6	Ink Type		Get	The current ink type is shown in the message box.
			Set	You can select BN-20: ECOSOL MAX2/3-CMYK], [ECOSOL MAX2/3-CMYKWh], [ECOSOL MAX3-CMYKMt] BN-20A : [ECOSOL MAX2/3-CMYK] BN-20D: [S-PG CMYKW] and set the selected ink type.
7	Head Wash		Start	You can wash ink lines and the head with cleaning cartridges. It takes about 10 minutes. BN-20/20D: You need 4 dummy catridges and 5 cleaning liquid cartridges. BN-20A: You need 4 cleaning liquid cartridges.
8	Ink Status		InkFilled	You can set the Ink Status to [InkFilled].
			NotFilled	You can set the Ink Status to [NotFilled].

Cutting Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
0
pt
Get
V
Back
0
pt
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set
Print-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set

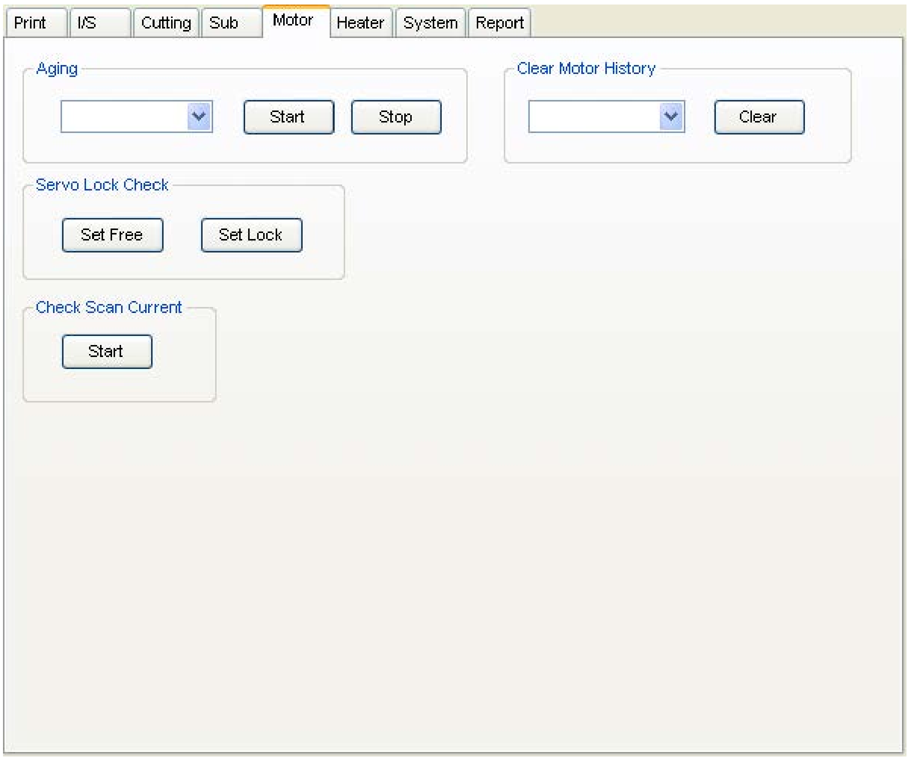
No.	Window name	Function	Button	Contents
1	Tool Pressure Adjust		Start	You can select [LOW"] or [HIGH] and start the Tool Pressure Adjustment.
			Back	You can return the carriage to the home position to finish the Tool Pressure Adjustment.
			Get	You can check the current adjustment value.
			Set	You can set the adjustment value in the edit box.
2	300g Test		Start	You can start the tool pressure test of 300gf.
			Back	You can return the carriage to the home position to finish the tool pressure test of 300gf.
			Tool Up	You can move up the tool during the tool pressure test of 300gf.
			Tool Down	You can move down the tool during the tool pressure test of 300gf.
3	Crop-Cut Adjust		Test Print	You can print the test pattern of Crop-Cut Adjustment.
			Get	You can check the current adjustment value.
			Set	You can enter the correction-values found in the test pattern for both Feed and Scan per 0.1mm unit and set the correction values.
4	Print-Cut Adjust		Test Print	You can print the test pattern of Print-Cut Adjustment.
			Get	You can check the current adjustment value.
			Set	You can enter the correction-values found in the test pattern for both Feed and Scan per 0.1mm unit and set the correction values.

Sub Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Cartridge IC
Check
Vaccum Fan
0
%
Start
Stop
Sensor Check
Start
Beep Check
Start
Stop

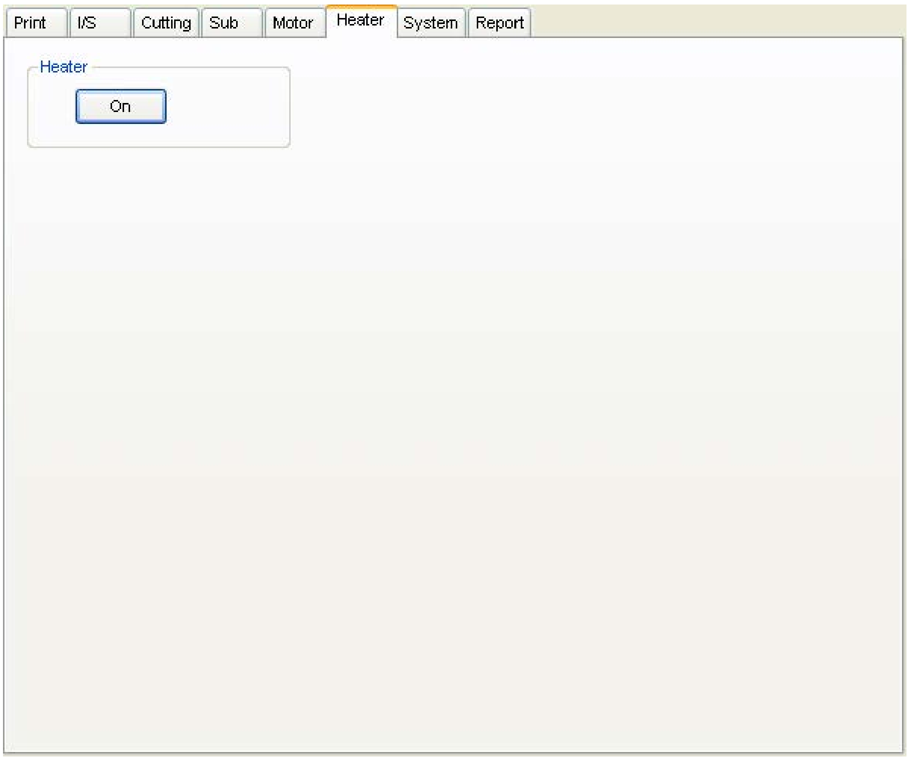
No.	Window name	Function	Button	Contents
1	Cartridge IC		Check	You can start checking if the machine can communicate with ink cartridge ICs. The cartridge status is shown in Log Message box by clicking this button.
2	Vaccum Fan		Start	You can start checking if the fan operates correctly by this button after you fill the fan power (0-100%) in the blank box.
			Stop	You can stop checking the fan operation by this button.
3	Sensor Check		Start	You can start checking if the sensors work correctly.
4	Beep Check		Start	You can start checking if beeping operates correctly by this button. The machine beeps one time per second.
			Stop	You can stop checking the beeping operation by this button.

Motor Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor History
Clear
Servo Lock Check
Set Free
Set Lock
Check Scan Current
Start

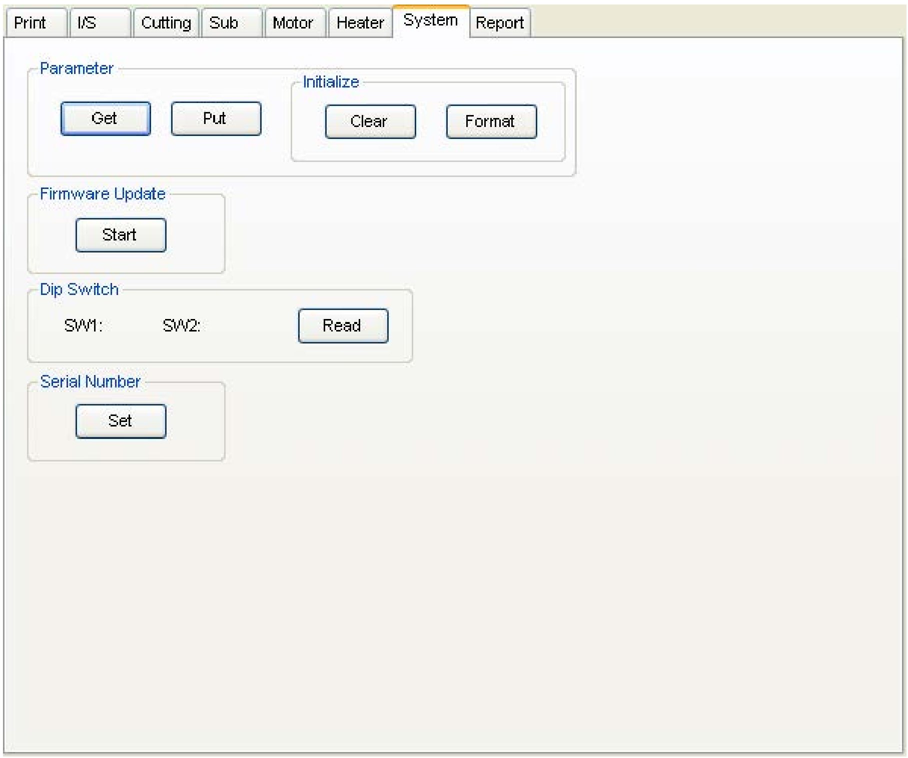
No.	Window name	Function	Button	Contents
1	Aging		Start	You can select [Scan], [Feed] or [Both] and start Aging.
			Stop	You can stop Aging and the head carriage returns to the home position.
2	Clear Motor Count History		Clear	You can select [Scan] or [Feed] and clear the running distance of the selected motor.
3	Servo Lock Check		Set Free	You can make the current gain of the Servo Motor free and check if the Servo Motor is free by moving the head carriage with your hand.
			Set Lock	You can make the Servo Motor locked and check if the Servo Motor is locked by moving the head carriage with your hand.
4	Check Scan Current		Start	You can get a current in scan direction by moving the head carriage.

Heater Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Heater
On

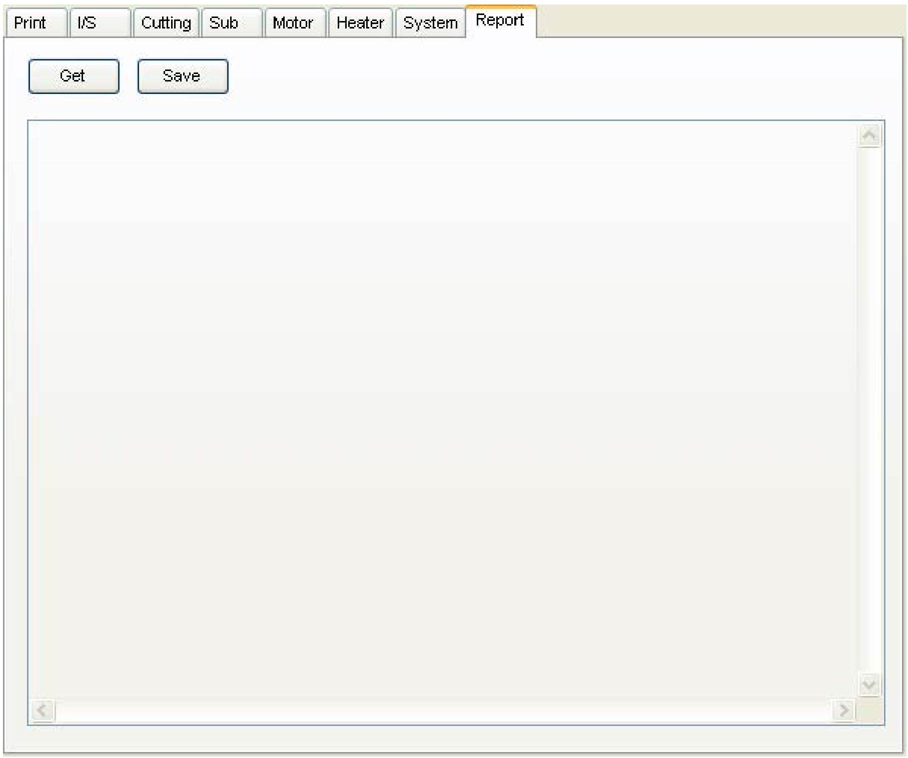
No.	Window name	Function	Button	Contents
1	Heater		On	You can sets the heater on or off. ON: Normal setting. The machine starts to print after the heater temperature is 40 degree C. OFF: Heater is always off. * Check if the heater setting is ON after the service activities

System Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Parameter
Get
Put
Initialize
Clear
Format
Firmware Update
Start
Dip Switch
SW1:
SW2:
Read
Serial Number
Set

No.	Window name	Function	Button	Contents
1	Parameter		Get	You can get a parameter file of the machine.
			Put	The selected parameter file is set to the machine.
		Initialize	Clear	The parameter of the machine is cleared. After this operation, you have to set the Serial Number and the Ink Type if you do not set.
			Format	The parameter of the machine is formatted as the default factory values. After this operation, you have to set the Serial Number and the Ink Type if you do not set.
2	Firmware Update		Start	You can update firmware .
3	DIP SW		Read	You can can read DIP switch status.
4	Serial Number		Set	You can write the Serial Number.

Report Tab


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Get
Save

No.	Window name	Function	Button	Contents
1			Get	You get the System Repot form the machine.
			Save	You can can save the displayed System Report as text file, pec file, or xml file.

HISTORY MENU △22 △25

MOTOR GROUP

Item	Contents	Unit	Reference
Motor scan	Total time that the Scan Motor has been rotated.	hours	Life: 3000 hours
Pump Times	Total time that the Pump Motor has been rotated.	times	Life: 200,000 times

HEAD GROUP Revised 10

Item	Contents	Unit	Reference
SHOT COUNT 1	Number of times piezo has driven per nozzle(H1 A)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT2
SHOT COUNT 2	Number of times piezo has driven per nozzle(H1 B)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT4
SHOT COUNT 3	Number of times piezo has driven per nozzle(H1 C)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT3
SHOT COUNT 4	Number of times piezo has driven per nozzle(H1 D)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT5
SHOT COUNT 5	Number of times piezo has driven per nozzle(H1 E)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT5
SHOT COUNT 6	Number of times piezo has driven per nozzle(H1 F)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT3
SHOT COUNT 7	Number of times piezo has driven per nozzle(H1 G)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT4
SHOT COUNT 8	Number of times piezo has driven per nozzle(H1 H)	Shots/1000	Life: 6 billion Shots/nozzle Ink from SLOT1

MAINTENANCE GROUP

Item	Contents	Unit	Reference
WipeCleaning count	Not use	times	
LightCleaning count	Number of times the Light Clenaing has been performed.	times	
SimpleCleaning count	Not use	times	
NormalCleaning count	Number of times the Normal Clenaing has been performed.	times	
BetweenCleaning count	Not use	times	
MediumCleaning count	Number of times the Medium Clenaing has been performed.	times	
PowerfulCleaning count	Number of times the Powerful Clenaing has been performed.	times	
EnhancedMaintenance count	Not use	times	
ManualCleaning count	Number of times the Manulal Cleaning has been performed	times	
ElapsedSinceManual Cleaning	Elapsed time from last Manual Cleaning	hours	
PrintSinceLastManual Cleaning	Printing time from laset Manual Cleaning	hours	

WIPE GROUP

Item	Contents	Unit	Reference
PrintHeadWiping	Number of times the Wiping has been performed.	times	
PrintHeadFeltWiping	Number of times the Felt Wiping has been performed.	times	
Wipe	Total number of times the Wiping has been performed.	times	
FeltWipe	Total number of times the Felt Wiping has been performed.	times	
ReplaceWipe	Number of times the Wipe has been replaced.	times	
ReplaceFeltWipe	Number of times the Felt Wiping has been replaced.	times	

PRINT GROUP

Item	Contents	Unit	Reference
Printing time	Time of printing performed.	hours	
TotalPrinting time	Total time of printing performed.	hours	
Printing page	Number of pages printed	pages	
TotalPrinting page	Total number of pages printed	pages	
Printing area	Printing area of printing	square meters	
TotalPrinting area	Total printing area of printing	square meters	

INK GROUP

Item	Contents	Unit	Reference
FillInk	Total time of Fill Ink performed.	times	
HeadWash	Total time of Head Wash performed.	times	
PumpUp	Total time of Pump up performed.	times	
InkCirculation	Total time of Ink Circulation performed.	times	
InkEmpty time	Total time of Ink Empty is deteced.	times	BN-20: 1-5 BN-20A: 1-4
InkConsumption ByMainte	The amount of consumed ink by printing	cc	BN-20: 1-5 BN-20A: 1-4
TotalInkConSumption ByMainte	Total amount of consumed ink by printing	cc	BN-20: 1-5 BN-20A: 1-4
InkConsumption ByMainte	The amount of consumed ink by maintenance	cc	BN-20: 1-5 BN-20A: 1-4
TotalInkConSumption ByMainte	Total amount of consumed ink by maintenance	cc	BN-20: 1-5 BN-20A: 1-4

ERROR GROUP

Item	Contents	Unit	Reference
UnknownPrintHead Error	Total time of Unknown Head Error occured.	times	
PrintHeadDryupError	Total time of Head Dry Up Error occured.	times	
Service call count	Total time of Service Call occured.		
Service call history	The number of the occured Service Call		
LowTemperatureError	Total time of Low Temperatue Error occured.	times	
HighTemperatureError	Total time of Low Temperatue Error occured.	times	

SYSTEM GROUP

Item	Contents	Unit	Reference
SubPowerOn	Total time of Sub Power ON	times	
SubPowerOn	Total hour of Sub Power ON	hours	
Sleep	Total hour of Sleep Mode ON	hours	
LowestTemperature	Detected Lowest Temperature is displayed.	C	
HighestTemperature	Detected highest Temperature is displayed.	C	
InkModeChanging	Total time of Ink Mode changed	times	
SetNvRam	Total time of NV Ram set	times	
SetHeadRank	Total time of Head Rank set	times	
SheetCut	This is not used.	times	
UncappedStartup	Total time of Head uncapped automatically	times	
AutoCapping	Total time of Head capped automatically	times	
PinchRollersDown	Total time of Pinch Rollers lowered	times	
MediaSetup	Total time of Media Setup performed.	times	

HEATER GROUP

Item	Contents	Unit	Reference
Heater	Total hour of Heater ON	hours	Test print time is excluded.

CUTTING GROUP

Item	Contents	Unit	Reference
Cutting time	Hour of Cutting performed	hours	
TotalCutting time	Total hour of Cutting performed	hours	
Cutting page	Page of Cutting performed	pages	
TotalCutting page	Total page of Cutting performed	pages	
ClearCutTime time	Total time of Cutting time cleared.	times	
ClearCutPage time	Total time of Cutting page cleared.	times	

SYSTEM REPORT 22

BN-20

```
======== SYSTEM_REPORT_1.1.0.0 ========
CurrentDate: 2011/08/11/ 15:19:13

==== System status ====
Model           : BN-20
Serial No.              : ZAH0121
FirmwareVer     : 110
BooterVer       : 100
MachineDate     : 2011/08/11/ 15:19:12
InkMode                 : InValid Ink Mode
DipSw           : 0
SysSw           : 0000

==== Print status ====
HeadRank                : 1918E80838A8B86879897R03
FactoryFeedCalib                : 98.77 %
FactoryHeadBidirAdj     : 1
UserFeedCalib           : 100.20 %
UserHeadBidirAdj                : 1
HeadTemp                : 27 C
DrainLiquid             : 489 cc

==== Cutting status ====
ForceAdj30gf            : 99 gf
ForceAdj200gf           : 191 gf
FactoryCropToolAdjFeed          : 0.100 mm
FactoryCropToolAdjScan          : 0.300 mm
FactoryPrintCutAdjFeed: .50 mm
FactoryPrintCutAdjScan: 0.850 mm
CutForce                        : 120 gf
CutVelocity             : 10 cm/sec
UserPrintCutAdjFeed     : .40 mm
UserPrintCutAdjScan     : -.40 mm
UserCropCutAdjFeed      : .50 mm
UserCropCutAdjScan      : .50 mm
ReplotCount             : 1 times

==== Heater status ====
PrintHeaterTemp         : 26 C

==== Motor group ====
Motor feed   (trip/total [clear])          : 0 / 0 hour [0]
Motor scan   (trip/total [clear])          : 20 / 0 hour [0]
Pump Times   (trip/total [clear])  : 6495 / 36 times [0]
Pump TimesCIR   (trip/total [clear])       : 338 / 9 times [0]
```

Revised 10

```
==== Head group ====
Shot Cnt.  1 (trip/total [clear])          : 1490590 / 57600 K times/nozzle [0]
Shot Cnt.  2 (trip/total [clear])          : 1489127 / 57600 K times/nozzle [0]
Shot Cnt.  3 (trip/total [clear])          : 1490287 / 57600 K times/nozzle [0]
Shot Cnt.  4 (trip/total [clear])          : 1497689 / 57600 K times/nozzle [0]
Shot Cnt.  5 (trip/total [clear])          : 1455904 / 57600 K times/nozzle [0]
Shot Cnt.  6 (trip/total [clear])          : 1454603 / 57600 K times/nozzle [0]
Shot Cnt.  7 (trip/total [clear])          : 1454605 / 57600 K times/nozzle [0]
Shot Cnt.  8 (trip/total [clear])          : 1454601 / 57600 K times/nozzle [0]
```

BN-20A

```
======== SYSTEM_REPORT_1.1.0.0 ========
CurrentDate: 2021/08/11/ 15:19:13

==== System status ====
Model           : BN-20A
Serial No.              : ZAH0121
FirmwareVer     : 110
BooterVer       : 100
MachineDate     : 2021/08/11/ 15:19:12
InkMode                 : InValid Ink Mode
DipSw           :  1
SysSw           : 0000

==== Print status ====
HeadRank                : 1918E80838A8B86879897R03
FactoryFeedCalib                : 98.77 %
FactoryHeadBidirAdj     : 1
UserFeedCalib           : 100.20 %
UserHeadBidirAdj                : 1
HeadTemp                : 27 C
DrainLiquid             : 489 cc

==== Cutting status ====
ForceAdj30gf            : 99 gf
ForceAdj200gf           : 191 gf
FactoryCropToolAdjFeed          : 0.100 mm
FactoryCropToolAdjScan          : 0.300 mm
FactoryPrintCutAdjFeed: .50 mm
FactoryPrintCutAdjScan: 0.850 mm
CutForce                        : 120 gf
CutVelocity             : 10 cm/sec
UserPrintCutAdjFeed     : .40 mm
UserPrintCutAdjScan     : -.40 mm
UserCropCutAdjFeed      : .50 mm
UserCropCutAdjScan      : .50 mm
ReplotCount             : 1 times

==== Heater status ====
PrintHeaterTemp         : 26 C

==== Motor group ====
Motor feed   (trip/total [clear])          : 0 / 0 hour [0]
Motor scan   (trip/total [clear])          : 20 / 0 hour [0]
Pump Times   (trip/total [clear])  : 6495 / 36 times [0]

==== Head group ====
Shot Cnt.  1 (trip/total [clear])          : 1490590 / 57600 K times/nozzle [0]
Shot Cnt.  2 (trip/total [clear])          : 1489127 / 57600 K times/nozzle [0]
Shot Cnt.  3 (trip/total [clear])          : 1490287 / 57600 K times/nozzle [0]
Shot Cnt.  4 (trip/total [clear])          : 1497689 / 57600 K times/nozzle [0]
Shot Cnt.  5 (trip/total [clear])          : 1455904 / 57600 K times/nozzle [0]
Shot Cnt.  6 (trip/total [clear])          : 1454603 / 57600 K times/nozzle [0]
Shot Cnt.  7 (trip/total [clear])          : 1454605 / 57600 K times/nozzle [0]
Shot Cnt.  8 (trip/total [clear])          : 1454601 / 57600 K times/nozzle [0]
```

```
==== Maintenance group ====
WipeCleaning count          : 0 times
LightCleaning count         : 0 times
SimpleCleaning count : 0 times
NormalCleaning count : 55 times
BetweenCleaning count : 0 times
MediumCleaning count : 0 times
PowerfulCleaning count : 0 times
EnhancedMaintenance count   : 0 times
ManualCleaning count : 1 times
ElapsedSinceManualCleaning  : 101081 hours
PrintSinceLastManualCleaning: 0 hours

==== Wiper group ====
PrintHeadWiping      : 6 times
PrintHeadFeltWiping         : 57 times
Wipe                 : 112 times
FeltWipe                    : 57 times
ReplaceWipe          : 2 times
ReplaceFeltWipe             : 0 times

==== Print group ====
Printing time : 0 hours
TotalPrinting time   : 22 hours
Printing page : 19 pages
TotalPrinting page   : 248 pages
Printing area : 0 square meters
TotalPrinting area   : 0 square meters

==== Ink group ====
FillInk       : 1 times
HeadWash      : 5 times
PumpUp               : 0 times
InkCirculation : 0 times
InkEmpty time(1-5)                : 0 / 0 / 1 / 1 / 0 times
InkConsumptionByPrint(1-5)        : 0 / 0 / 0 / 0 / 0 cc
TotalInkConSumptionByPrint(1-5)   : 1 / 59 / 24 / 34 / 23 cc
InkConsumptionByMainte(1-5)       : 4 / 4 / 9 / 9 / 9 cc
TotalInkConSumptionByMainte(1-5)  : 54 / 52 / 97 / 97 / 97 cc

==== Error group ====
UnknownPrintHeadError : 0 times
PrintHeadDryupError  : 0 times
Service call count          : 0
Service call history        : 0 0 0 0 0 0 0 0
LowTemperatureError  : 0 times
HighTemperatureError : 0 times

==== System group ====
SubPowerOn           : 61 times
SubPowerOn           : 156 hours
Sleep                : 63 hours
LowestTemperature    : 26 C
HighestTemperature   : 34 C
InkModeChanging             : 3 times
SetNvRam             : 1 times
SetHeadRank          : 0 times
SheetCut                    : 0 times
UncappedStartup             : 0 times
AutoCapping          : 2 times
PinchRollersDown            : 118 times
MediaSetup           : 158 times
```

```
==== Maintenance group ====
WipeCleaning count          : 0 times
LightCleaning count         : 0 times
SimpleCleaning count : 0 times
NormalCleaning count : 55 times
BetweenCleaning count : 0 times
MediumCleaning count : 0 times
PowerfulCleaning count : 0 times
EnhancedMaintenance count   : 0 times
ManualCleaning count : 1 times
ElapsedSinceManualCleaning  : 101081 hours
PrintSinceLastManualCleaning: 0 hours

==== Wiper group ====
PrintHeadWiping      : 6 times
PrintHeadFeltWiping         : 57 times
Wipe                 : 112 times
FeltWipe                    : 57 times
ReplaceWipe          : 2 times
ReplaceFeltWipe             : 0 times

==== Print group ====
Printing time : 0 hours
TotalPrinting time   : 22 hours
Printing page : 19 pages
TotalPrinting page   : 248 pages
Printing area : 0 square meters
TotalPrinting area   : 0 square meters

==== Ink group ====
FillInk       : 1 times
HeadWash      : 5 times
PumpUp               : 0 times
InkCirculation : 0 times
InkEmpty time(1-4)                : 0 / 0 / 1 / 1  times
InkConsumptionByPrint(1-4)        : 0 / 0 / 0 / 0  cc
TotalInkConSumptionByPrint(1-4)   : 1 / 59 / 24 / 34  cc
InkConsumptionByMainte(1-4)       : 4 / 4 / 9 / 9 cc
TotalInkConSumptionByMainte(1-4)  : 54 / 52 / 97 / 97  cc

==== Error group ====
UnknownPrintHeadError : 0 times
PrintHeadDryupError  : 0 times
Service call count          : 0
Service call history        : 0 0 0 0 0 0 0 0
LowTemperatureError  : 0 times
HighTemperatureError : 0 times

==== System group ====
SubPowerOn           : 61 times
SubPowerOn           : 156 hours
Sleep                : 63 hours
LowestTemperature    : 26 C
HighestTemperature   : 34 C
InkModeChanging             : 3 times
SetNvRam             : 1 times
SetHeadRank          : 0 times
SheetCut                    : 0 times
UncappedStartup             : 0 times
AutoCapping          : 2 times
PinchRollersDown            : 118 times
MediaSetup           : 158 times
```

```
===== Heater group ====
Heater              : 94 hours

==== Cutting group ====
Cutting time                        : 2 hours
TotalCutting time                   : 2 hours
Cutting page                        : 131 pages
TotalCutting page                   : 131 pages
ClearCutTime time                            : 0 times
ClearCutPage time                            : 0 times

==== Cartridge group ====
#: Serial           / InkType / Capacity / Lot# / Consumption / UsingTime / InsertTime / Flag
1: 201961821874004 / 5 / 200 cc / 19968 / 44.493 cc / 2711135 sec / 3 times / 0
2: 2011205254400195 / 5 / 200 cc / 43521 / 105.700 cc / 1934844 sec / 11 times / 0
3: 2011285245400190 / 5 / 200 cc / 29057 / 53.356 cc / 875179 sec / 9 times / 0
4: 20201119246400220 / 5 / 200 cc / 2561 / 33.528 cc / 689780 sec / 4 times / 0
5: 20111124245400202 / 5 / 200 cc / 51585 / 43.566 cc / 938962 sec / 8 times / 0


======== END_SYSTEM_REPORT ========


======== MACHINE_EVENT_1.0.2.0 ========

2011/08/11/ 15:00:45 Event#21: Temprature 27 degree C
2011/08/11/ 14:06:51 Event#20: Flushing Self Flushing
2011/08/11/ 14:06:18 Event#19: Ink Circulates Self Circulate
2011/08/11/ 14:06:05 Event#18: Resume Motor
2011/08/11/ 14:05:49 Event#17: Suspend Motor
2011/08/11/ 14:00:47 Event#16: Set Date
2000/01/01/ 00:00:00 Event#15: Main Power On Normal Mode
2011/08/11/ 13:59:52 Event#14: Set up Sheet Width: 432mm/ Environment Value: 32710[0.001 percent]
2011/08/11/ 13:59:25 Event#13: Set Date
2011/08/11/ 13:59:00 Event#12: Sub Power On Normal Mode
2011/08/11/ 13:57:40 Event#11: Flushing Self Flushing
2011/08/11/ 13:57:07 Event#10: Ink Circulates Self Circulate
2011/08/11/ 13:56:54 Event#9: Resume Motor
2011/08/11/ 13:54:46 Event#8: Suspend Motor
2011/08/11/ 13:41:04 Event#7: Set Date
2011/08/11/ 13:39:45 Event#6: Set Date
2011/08/11/ 13:39:40 Event#5: Main Power On Normal Mode
2011/08/11/ 13:39:38 Event#4: Peck Uses 1 times times
2011/08/11/ 13:39:15 Event#3: Set Date
2000/01/01/ 00:00:00 Event#2: Main Power On Normal Mode
2011/08/11/ 13:38:39 Event#1: Set Date

======== END_MACHINE_EVENT ========
```

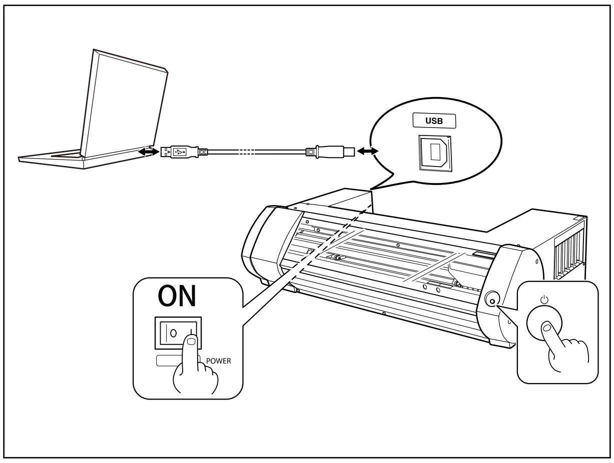
```
===== Heater group ====
Heater              : 94 hours

==== Cutting group ====
Cutting time                        : 2 hours
TotalCutting time                   : 2 hours
Cutting page                        : 131 pages
TotalCutting page                   : 131 pages
ClearCutTime time                            : 0 times
ClearCutPage time                            : 0 times

==== Cartridge group ====
#: Serial           / InkType / Capacity / Lot# / Consumption / UsingTime / InsertTime / Flag
1: 201961821874004 / 5 / 200 cc / 19968 / 44.493 cc / 2711135 sec / 3 times / 0
2: 2011205254400195 / 5 / 200 cc / 43521 / 105.700 cc / 1934844 sec / 11 times / 0
3: 2011285245400190 / 5 / 200 cc / 29057 / 53.356 cc / 875179 sec / 9 times / 0
4: 20201119246400220 / 5 / 200 cc / 2561 / 33.528 cc / 689780 sec / 4 times / 0


======== END_SYSTEM_REPORT ========


======== MACHINE_EVENT_1.0.2.0 ========

2021/08/11/ 15:00:45 Event#21: Temprature 27 degree C
2021/08/11/ 14:06:51 Event#20: Flushing Self Flushing
2021/08/11/ 14:06:18 Event#19: Ink Circulates Self Circulate
2021/08/11/ 14:06:05 Event#18: Resume Motor
2021/08/11/ 14:05:49 Event#17: Suspend Motor
2021/08/11/ 14:00:47 Event#16: Set Date
2000/01/01/ 00:00:00 Event#15: Main Power On Normal Mode
2021/08/11/ 13:59:52 Event#14: Set up Sheet Width: 432mm/ Environment Value: 32710[0.001 percent]
2021/08/11/ 13:59:25 Event#13: Set Date
2021/08/11/ 13:59:00 Event#12: Sub Power On Normal Mode
2021/08/11/ 13:57:40 Event#11: Flushing Self Flushing
2021/08/11/ 13:57:07 Event#10: Ink Circulates Self Circulate
2021/08/11/ 13:56:54 Event#9: Resume Motor
2021/08/11/ 13:54:46 Event#8: Suspend Motor
2021/08/11/ 13:41:04 Event#7: Set Date
2021/08/11/ 13:39:45 Event#6: Set Date
2021/08/11/ 13:39:40 Event#5: Main Power On Normal Mode
2021/08/11/ 13:39:38 Event#4: Peck Uses 1 times times
2021/08/11/ 13:39:15 Event#3: Set Date
2000/01/01/ 00:00:00 Event#2: Main Power On Normal Mode
2021/08/11/ 13:38:39 Event#1: Set Date

======== END_MACHINE_EVENT ========
```

4-2 HOW TO UPGRADE/INSTALL FIRMWARE (Referential Time : 5 min)

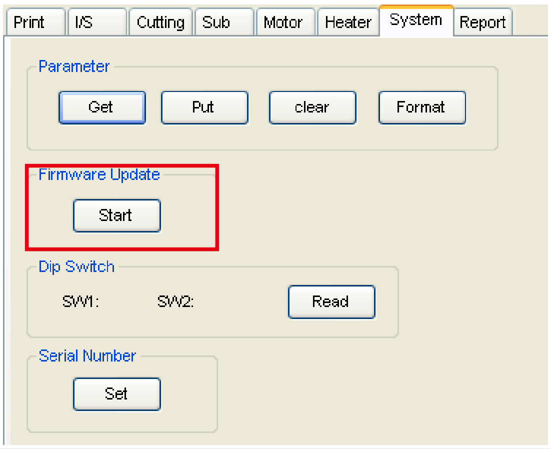
It is necessary to prepare the followings to upgrade/install the firmware.

1. Firmware file
2. WindowsPC (USB port is required.)
3. Service Application
4. USB Cable

1 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.


USB
ON
POWER

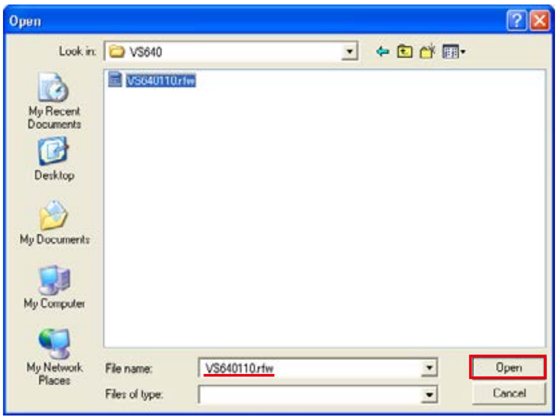
2 Strat up the Service Application and select [System] tab. Then, click [Firmware Updata]>[Start].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Parameter
Get
Put
clear
Format
Firmware Update
Start
Dip Switch
Read
Serial Number
Set

SW1:

SW2:

3 [OPEN] screen is displayed.
Select the firmware file and click [Open].
The firmware will be sent to the printer.

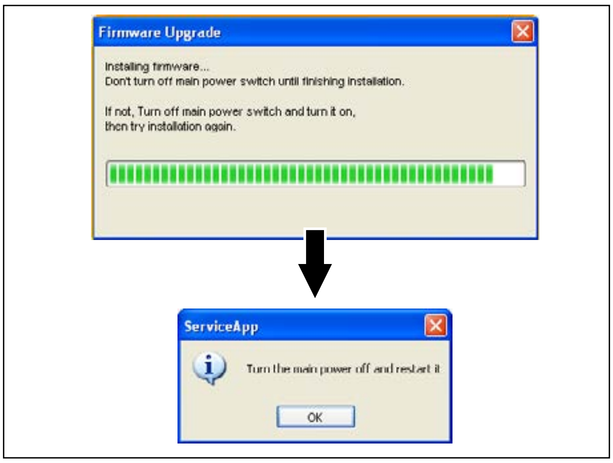

Open
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
VS640110.rfw
Open
Cancel

Look in: VS640

File name: VS640110.rfw

Files of type:

4 The printer goes into the Firmware Upgrade mode automatically.
When upgrade is completed, the message shown in the figure is displayed. Click [OK] and turn off and on the Main Power SW.

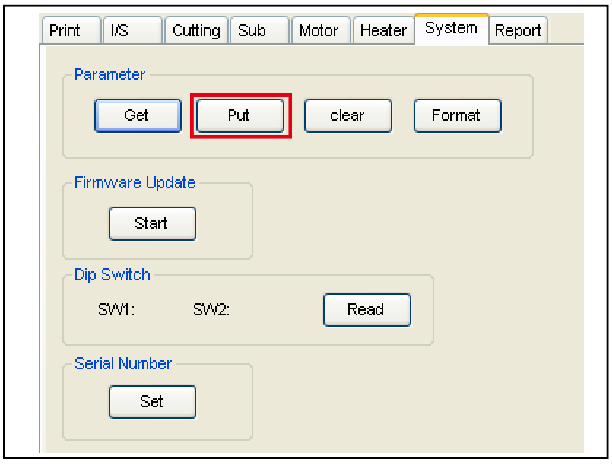

Firmware Upgrade
ServiceApp
OK

Installing firmware...
Don't turn off main power switch until finishing installation.

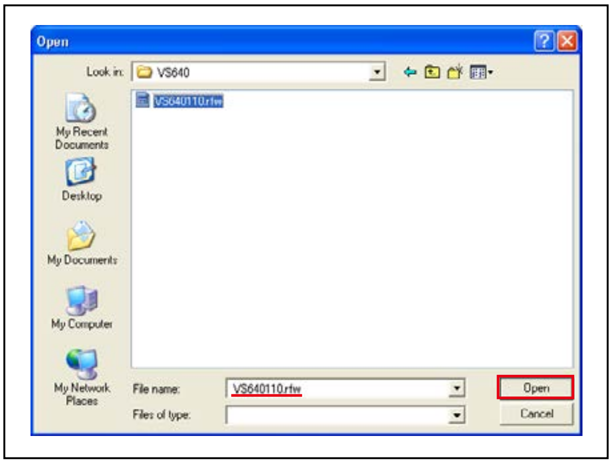
If not, Turn off main power switch and turn it on,
then try installation again.

Turn the main power off and restart it

5 Start up the Service Appliaction.
Select [System] tab and click [Parameter]>[Put].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Parameter
Get
Put
clear
Format
Firmware Update
Start
Dip Switch
SW1:
SW2:
Read
Serial Number
Set

6 [OPEN] screen is displayed.
Select the System Parameter file that is saved before the Main Board replacement.
Click [Open]. Service Application starts to send the System Parameter to the printer.

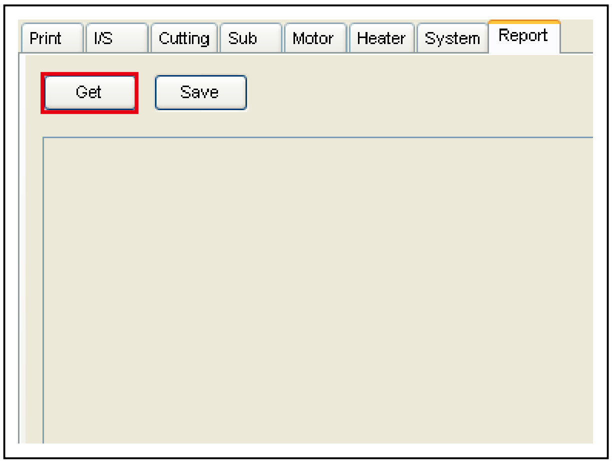

Open
My Recent Documents
Desktop
My Documents
My Computer
My Network Places
VS640110.rfw
Open
Cancel

Look in: VS640

File name: VS640110.rfw

Files of type:

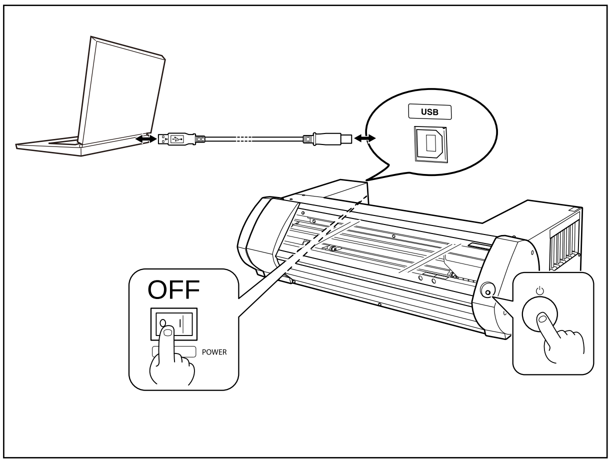
7 Select [Report] tab and click [Get].
Confirm that the System Parameter is reloaded properly.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Get
Save

4-3 HEAD ALIGNMENT (Referential Time : 15 min.)

This is necessary to obtain the good printing quality. Be sure to operate this alignment when the head is replaced. If the heads are not aligned, printing problems such as banding, fine lines and gap between bands could occur. The PET-G is required for this alignment.

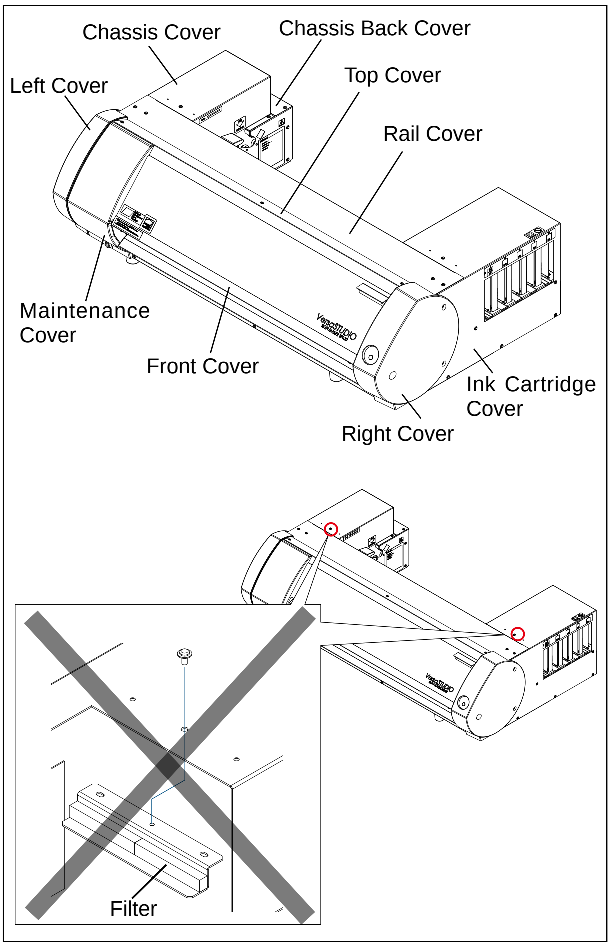
1 Turn off the Main Power SW and Sub Power SW, then disconnect the printer with the USB cable.


USB
OFF
POWER

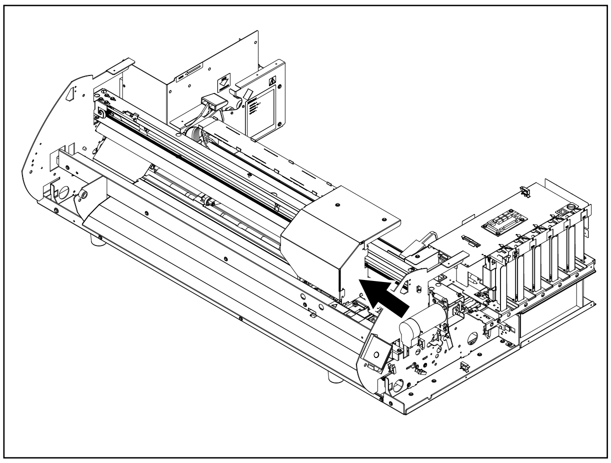
2 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

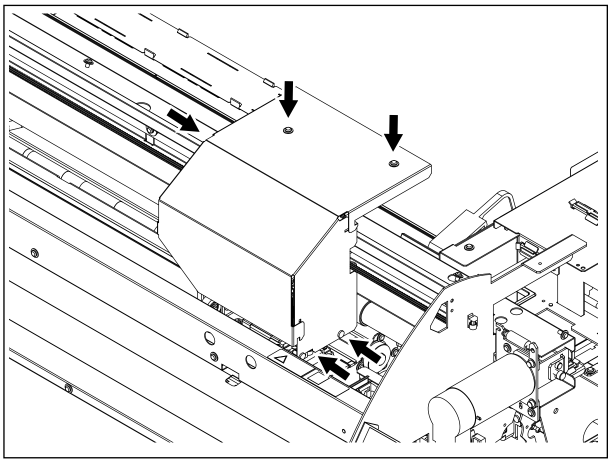
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

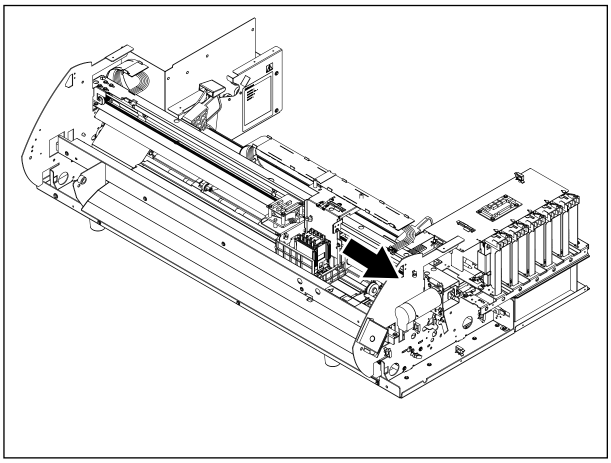
3 Move the Head Carriage on the Bed.



4 Remove the Head Carriage Cover.

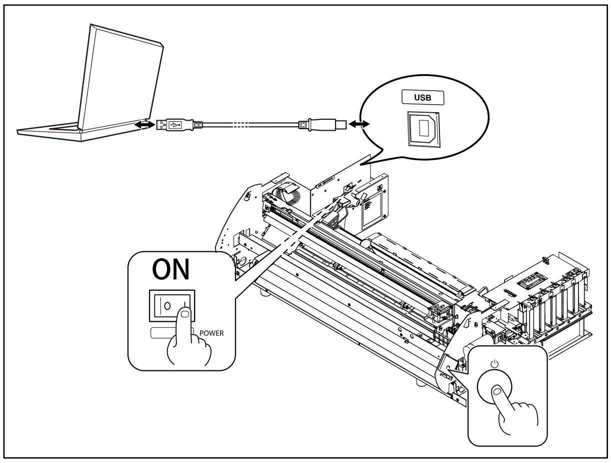


5 Move the Head Carriage to the capping position.



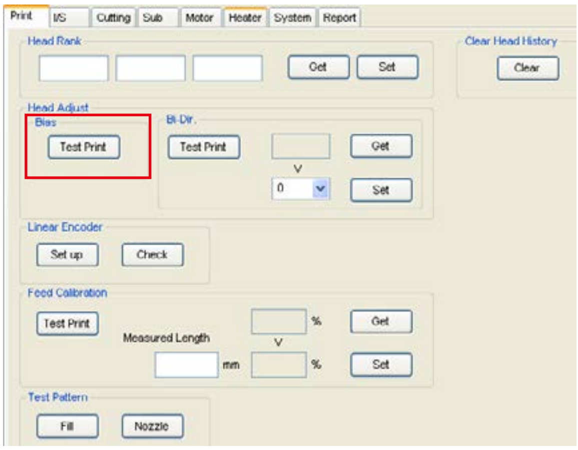
6 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.

Set up the PET-G on the printer.

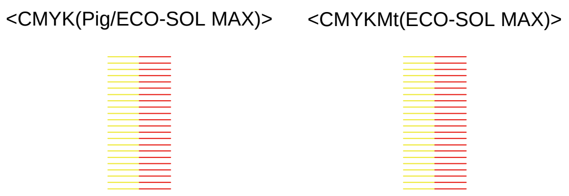


[BIAS ADJUSTMENT]

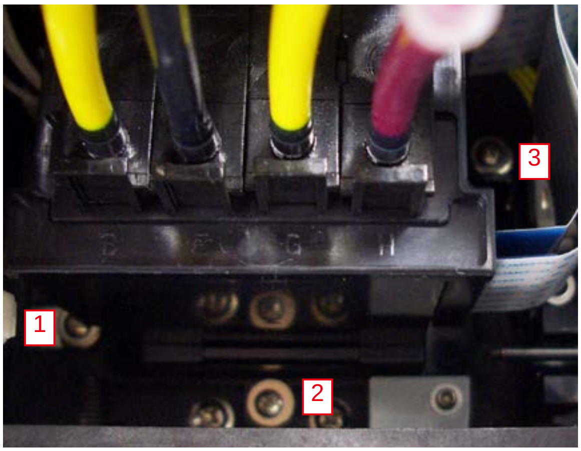
7 Strat up the Service Application and select [Print] tab. Then, click [Head Adjust]>[Bias]>[Test Print].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
V
0
Get
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
%
V
mm
%
Get
Set
Test Pattern
Fill
Nozzle

8 Test pattern is printed. The test pattern is different depending on the ink type.

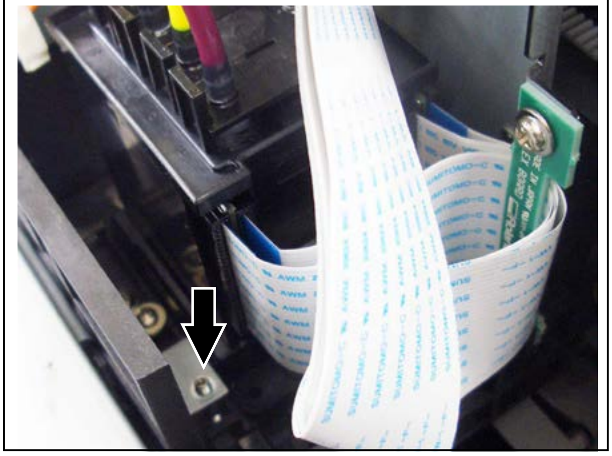


9 Loosen the three screws fixing the Head in the order of the figure.



Loosen the screws fixing the head for 1/2 turn.
If the screws are loosened too much, the adjustment cannot be done correctly.

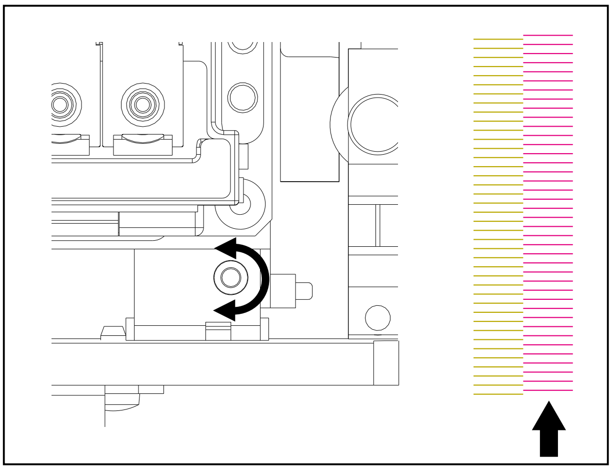
10 Insert the 1.5 mm Hexagonal Wrench through the hole of the Head Carriage, then turn the Adjustment Screw to make the lines of each color in the test pattern straight.



Position of the printing moves one line by turning the screw 1/4 turn.

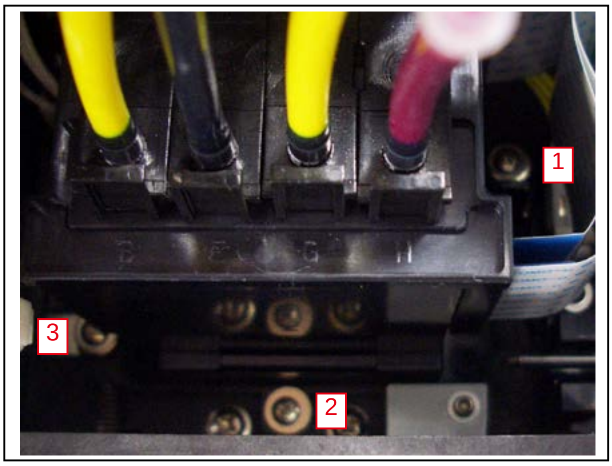
Revised 3

When the right half of the lines are shifting downwards, turn the screw CW.
When the right half of the lines are shifting upwards, turn the screw CCW two or three round to get back to the position where the right-side lines are lower than the left ones. Print the test pattern again, and perform the head adjustment



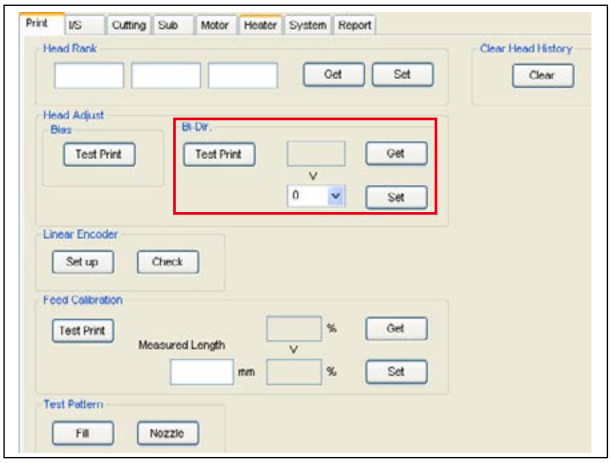
When adjusting the head position, turn the screw Clockwise.
Turning the screw Counterclockwise is only when fitting back the misalignment.

11 Tighten the screws fixing the head in order as shown in the figure, using the Torque Driver (ST-056).

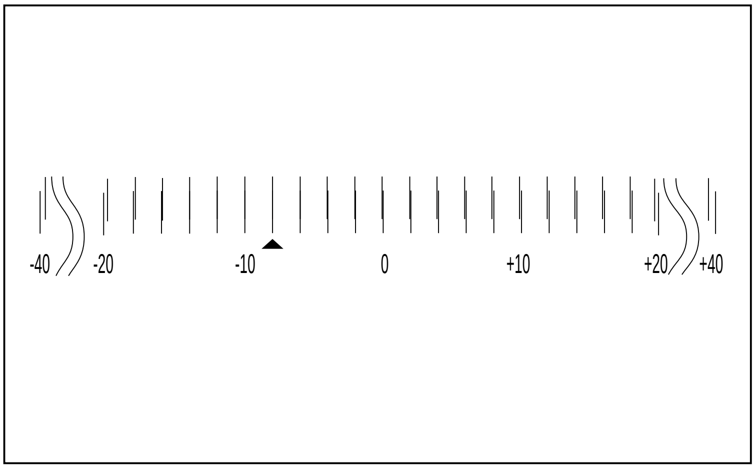


Torque for tightening is **2kgf • cm (20cNm)**.
Make sure not to tighten the screws too strong.

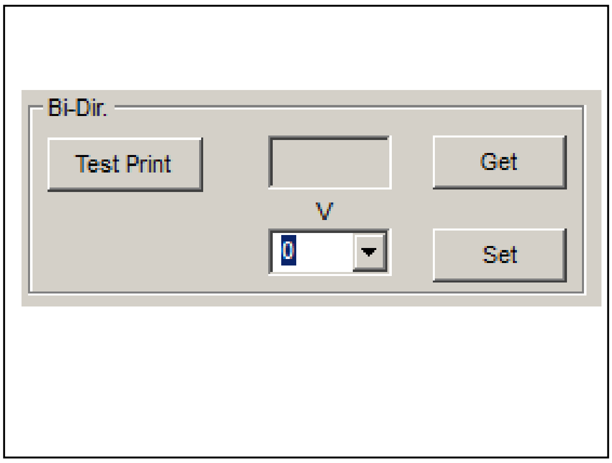
12 **[BIDIRECTION ADJUSTMENT]**
Click [Head Adjust]>[Bi-Dir]>[Test Print].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
%
Get
V
mm
%
Set
Test Pattern
Fill
Nozzle

13 Test pattern is printed.
Find the position where the two lines are overlapping.
The number with ▲ is the current setting.
The increment between two lines is two.
The number with ▲ is the current setting.


-40
-20
-10
0
+10
+20
+40

14 Select the parameters checked at step 13 in [Bi-Dire]>[V].
Click [Set] to save the settings.

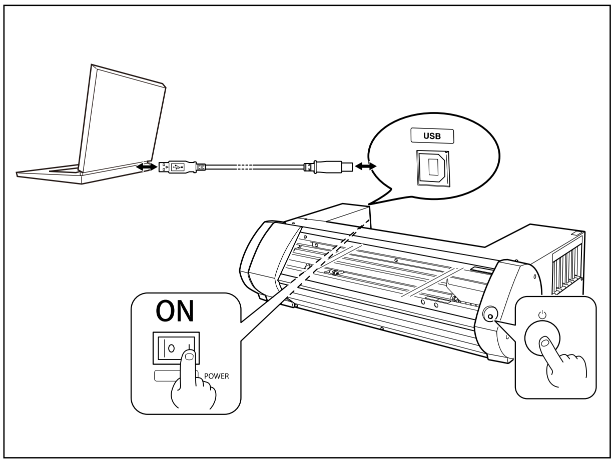

Bi-Dir.
Test Print
Get
V
0
Set

Parameters can be selected with an increment of 1.

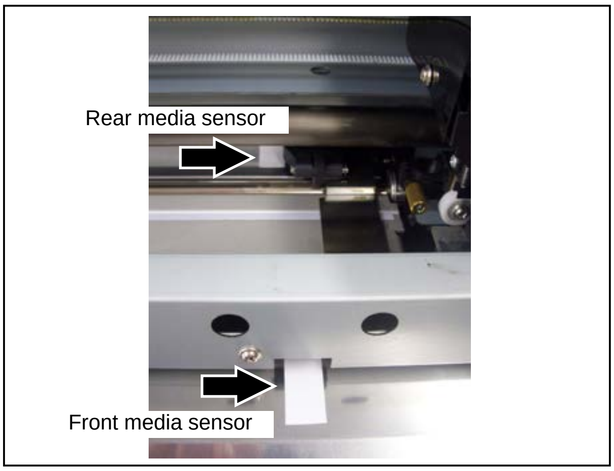
4-4 LINEAR ENCODER SETUP (Referential Time : 5min.)

This is for checking the reading of the linear encoder and for calibrating its expansion/contraction caused by the operation environment. This operation is required when Limit Sensor, Encoder Scale or Encoder Module is replaced or the position is adjusted.

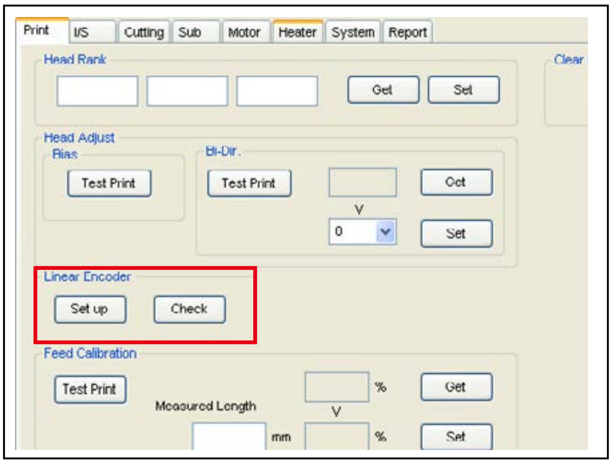
1 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.


USB
ON
POWER

2 Make sure to cover the front and rear the media sensors. Then, lower the Pinch Rollers.

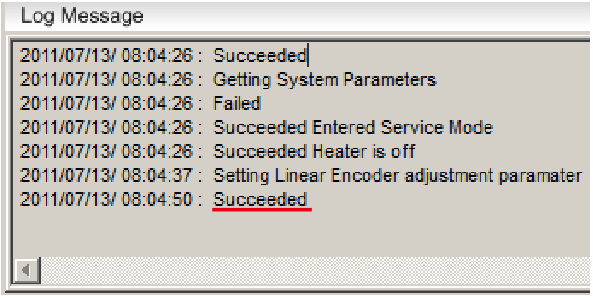

Rear media sensor
Front media sensor

3 Strat up the Service Application and select [Print] tab. Then, click [Linear Encoder]>[Set up].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear
Head Adjust
Bias
Test Print
Bi-Dir
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
%
Get
V
mm
%
Set

4 The messages appears in [Log Message] at the completion of the set up. In case of Setup error, check the followings.

Dirt/Scratch on the Encoder Scale.
Dirt/Scratch on the Encoder Module.
Encoder Scale is not between the Encoder Module.
Backlash of the Carriage Motor Gear and the Drive Gear.
Fixation between the Carriage and the Carriage Belt.
Bad Contact of the cables.



```
2011/07/13/ 08:04:26 :  Succeeded
2011/07/13/ 08:04:26 :  Getting System Parameters
2011/07/13/ 08:04:26 :  Failed
2011/07/13/ 08:04:26 :  Succeeded Entered Service Mode
2011/07/13/ 08:04:26 :  Succeeded Heater is off
2011/07/13/ 08:04:37 :  Setting Linear Encoder adjustment paramater
2011/07/13/ 08:04:50 :  Succeeded
```

4-5 CROP-CUT ADJUSTMENT (Referential Time : 10min.)

This adjustment is for checking the sensitivity of the Crop Mark Sensor and calibrating the relative positions of Tool and Crop Mark Sensor.

This adjustment is completely the same as [CropMark Adjustment] of the Utility. If you perform [CropMark Adjustment] of the Utility, you do not have to perform this adjustment.

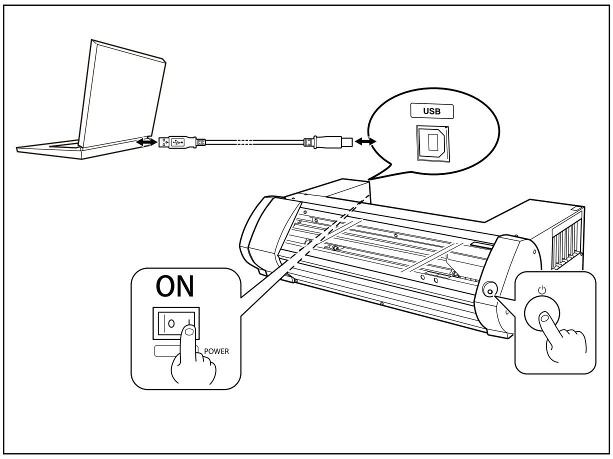
Any media can be used for this adjustment, however, the sensitivity of the Crop Mark Sensor is adjusted for the media which is used when you perform this adjustment or or [CropMark Adjustment] of the Utility.
The sensitivity of the Crop Mark Sensor is changed only when you perform this adjustment or [CropMark Adjustment] of the Utility.

If it is not adjusted, the following symptoms occur.
- The Crop Mark detection failure
- The wrong cutting position based on the detected Crop Marks
- The misalignment of the Print and Cut

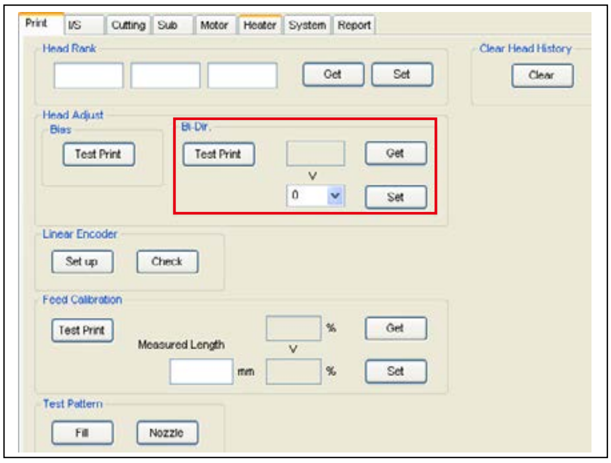
This adjustment is required under following cases.
- Crop Mark Sensor Board or Cut Carriage Board or Head or Tool Motor is replaced or adjusted.
- The distance between Crop Mark Sensor and the bed surface is changed.
- Head Carriage ASSY is replaced.

1 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.
Setup the media on the printer.

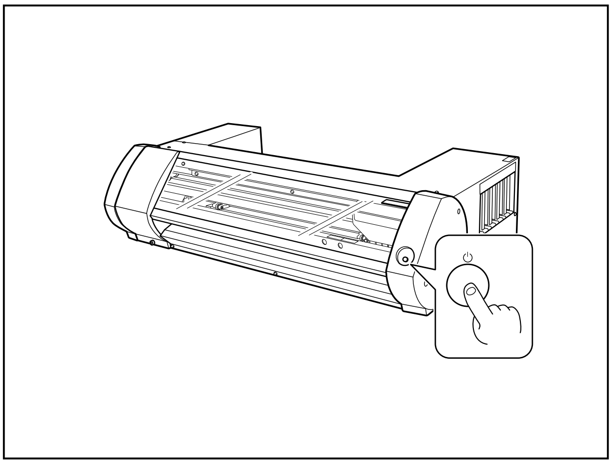
Any media can be used for this adjustment.


USB
ON
POWER

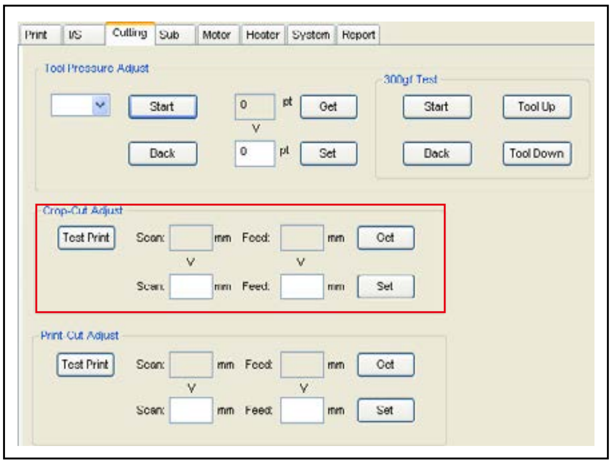
2 Perform Bidirectional Adjustment referring to [4-3 HEAD ALIGNMENT].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
%
Get
V
mm
%
Set
Test Pattern
Fill
Nozzle

3 To activate the adjustment value, turn off and on the Sub Power SW.

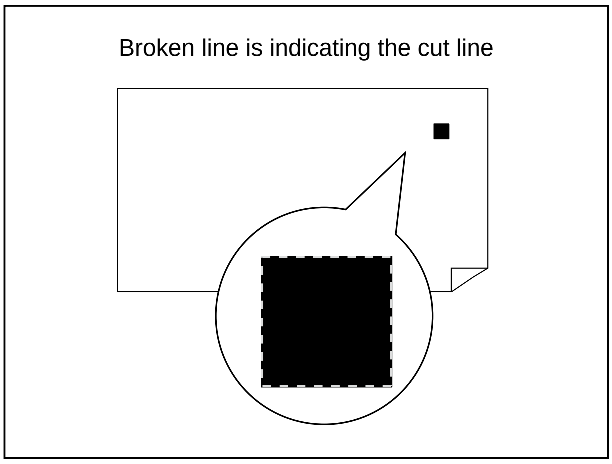


4 Select [Cutting] tab. Then, click [Crop-Cut Adjst]>[Test Print]. The test print and cut will be performed.

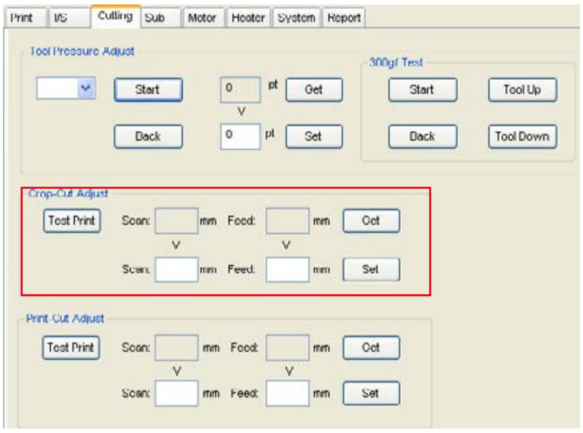

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
Back
0
pt
Get
V
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set
Print-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set

5 A Crop Mark is printed, and it is detected by the Crop Mark Sensor, and its contour is cut. Confirm the cut line position on the print visually.

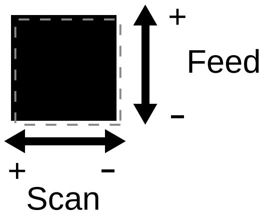
If it is difficult to see the cut line visually, use a magnifier.


Broken line is indicating the cut line

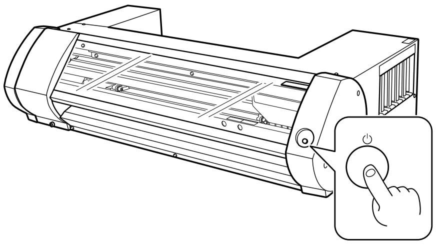
6 Adjustment is completed if the position error of cut line is within +/-0.1mm. If not, measure the shift length in the scan and the feed directions. Then, input shift length in [Crop-Cut Adjst]>[Scan]/[Feed]>[V] and click [Set].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
0
pt
Get
V
Back
0
pt
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set
Print Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set

Fine Adjustment

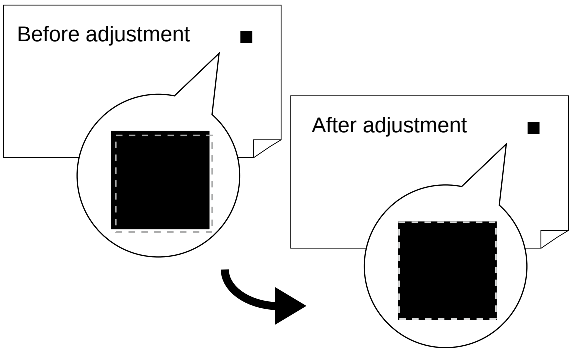


7 To activate the adjustment value, turn off and on the Sub Power SW.



8 Perform the test print again for confirmation. Adjustment is completed if the position of cut line is satisfactory.
If not, repeat the adjustment again.

Broken line is indicating the cut line

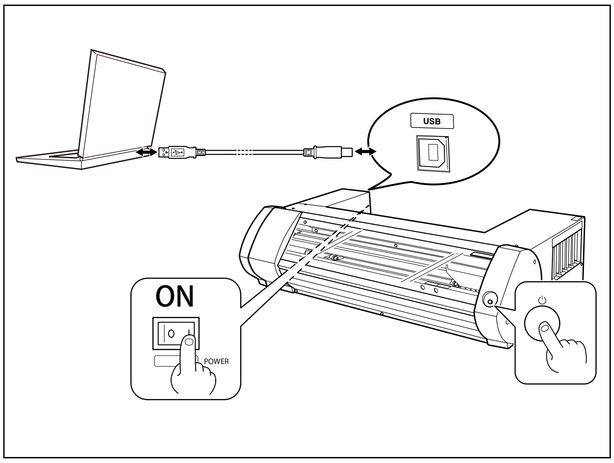

Before adjustment
After adjustment

4-6 PRINT / CUT POSITION ADJUSTMENT (Referential Time : 10min.)

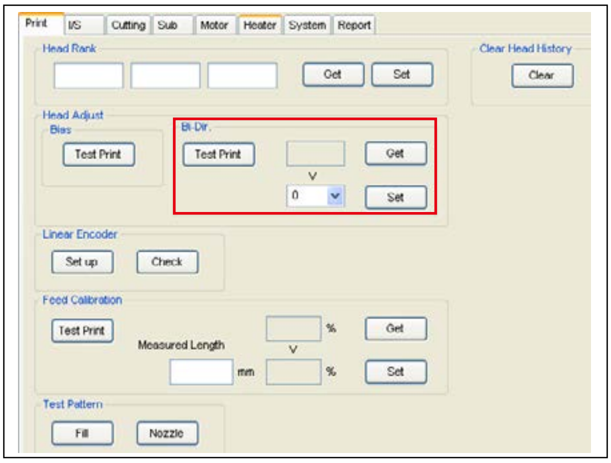
This adjustment is for calibrating the relative positions of printing and cutting. If it is not adjusted, it may result in the misalignment of the printing and cutting.
This adjustment is required when Tool Motor, Head Carriage ASSY, or a head is replaced or adjusted, and also when the relative distance between the Head Carriage ASSY and head is changed.

1 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.
Setup the media on the printer.

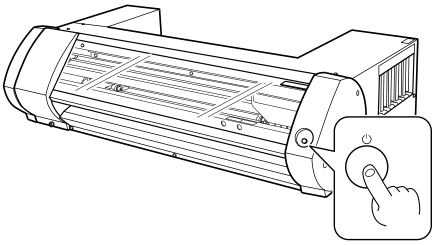
Any media can be used for this adjustment.


USB
ON
POWER

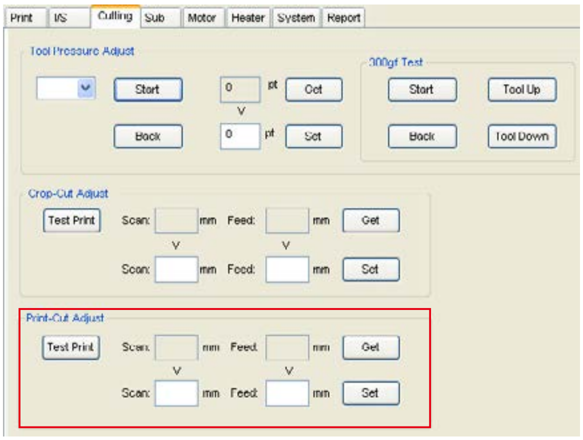
2 Perform Bidirectional Adjustment referring to [4-3 HEAD ALIGNMENT].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
mm
%
Get
V
%
Set
Test Pattern
Fill
Nozzle

3 To activate the adjustment value, turn off the Sub Power SW once and then turn on again.



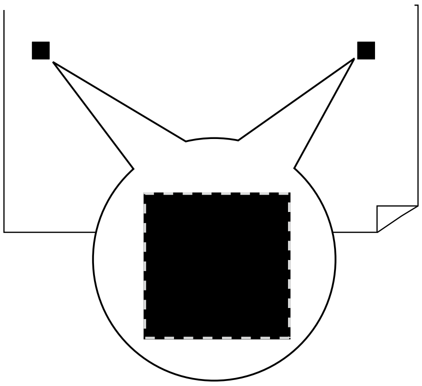
4 Select [Cutting] tab. Then, click [Print-Cut Adjst]>[Test Print]. The test print and cut will be performed.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
Back
0 pt
V
0 pt
Get
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan: mm Feed: mm
Get
V V
Scan: mm Feed: mm
Set
Print-Cut Adjust
Test Print
Scan: mm Feed: mm
Get
V V
Scan: mm Feed: mm
Set

5 Two marks are printed at the left-end and right-end of the media, and each mark is cut. Confirm the cut line positions on the marks visually.

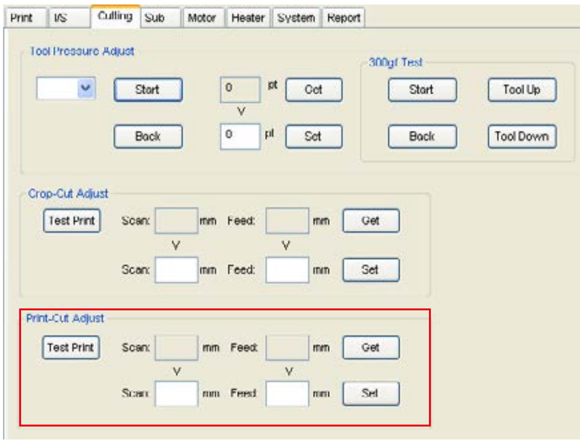
If it is difficult to see the cut line visually, use a magnifier.

Broken line is indicating the cut line

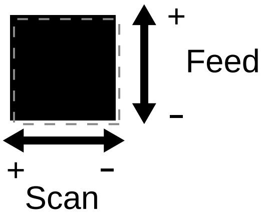


6 Adjustment is completed if the position error of cut line is within +/-0.1mm. If not, measure the shift length of both marks in the scan and the feed directions.

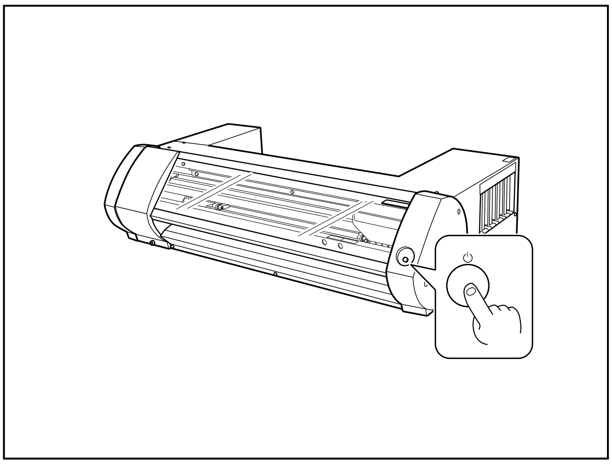
Calcutlate the average value of the shift lengh. Then, input shift length in [Print-Cut Adjst]>[Scan]/[Feed]>[V] and click [Set].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
Back
0 pt
V
0 pt
Get
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan: mm Feed: mm
Get
V V
Scan: mm Feed: mm
Set
Print-Cut Adjust
Test Print
Scan: mm Feed: mm
Get
V V
Scan: mm Feed: mm
Set

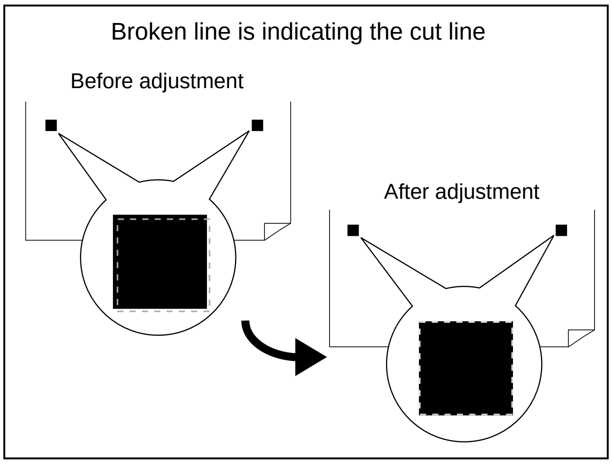
Fine Adjustment



7 To activate the adjustment value, turn off the Sub Power SW once and then turn on again..



8 Perform the test print again for confirmation. Adjustment is completed if the position of cut line is satisfactory.
If not, repeat the adjustment again.

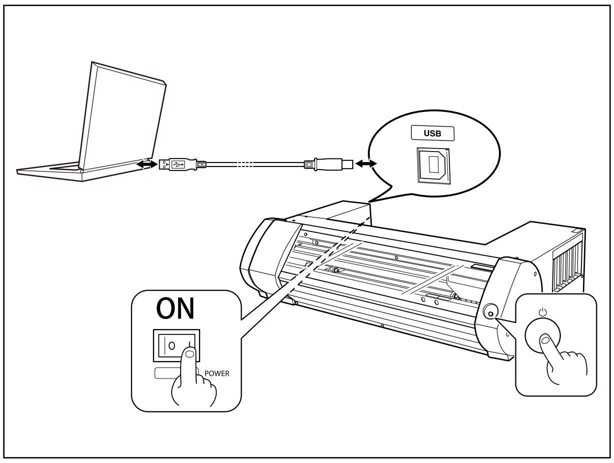

Broken line is indicating the cut line
Before adjustment
After adjustment

4-7 CALIBRATION (FEEDING DIRECTION) (Referential Time : 20 min.)

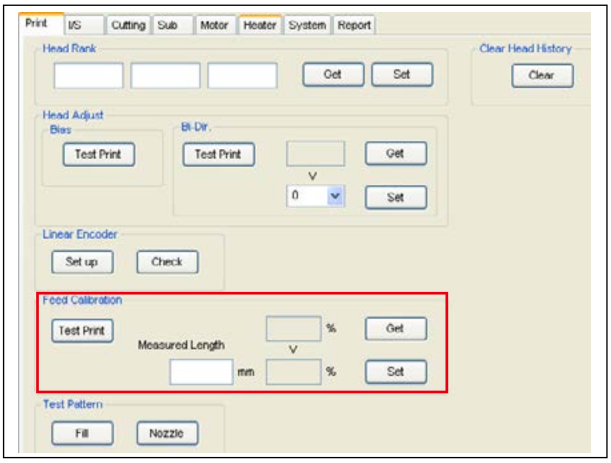
This adjustment is for calibrating the feed amount of media. It allows the media to be fed inproper amount by calibrating the variation in Grit Roller diameter. Calibration is made based on the value in feeding media [PET-G]. Without proper calibration, it may cause misalignment in the feed amount of media, and it results in problems such as white banding, banding of overlap or the dimension error of print result compared to the original data.

1 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.
Setup the PET-G on the printer.

Any media can be used for this adjustment.

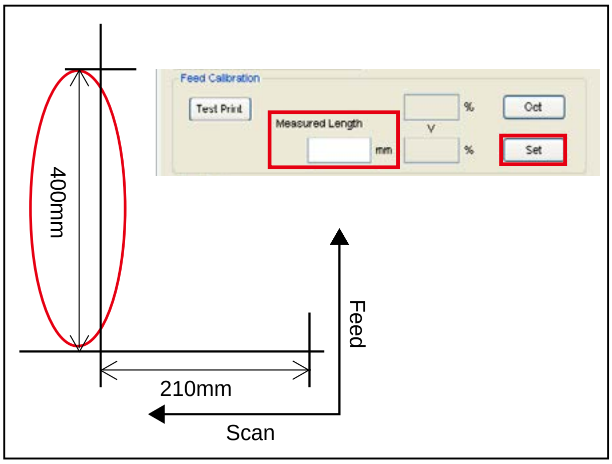

USB
ON
POWER

2 Strat up the Service Application and select [Print] tab. Then, click [Feed Calibration]>[Test Print].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
V
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
%
Get
V
mm
%
Set
Test Pattern
Fill
Nozzle

3 Measure the length of the feed direction.
Then, input measured length into [Feed Calibration] >[Measured Length] and click [Set].

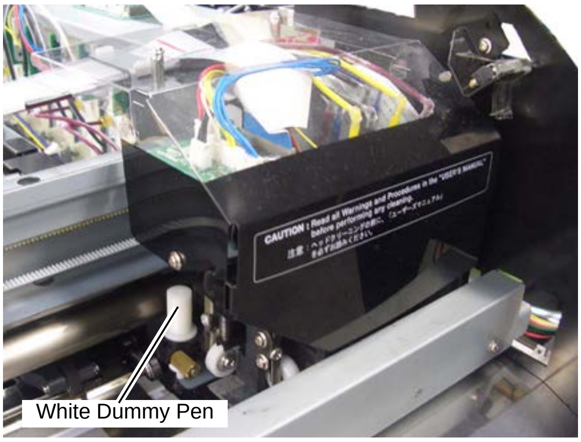
Test pattern is always printed with offset 0.00%. Even if a correction is made, the test pattern is not changed.


Feed Calibration
Test Print
Measured Length
%
Get
V
mm
%
Set
400mm
210mm
Feed
Scan

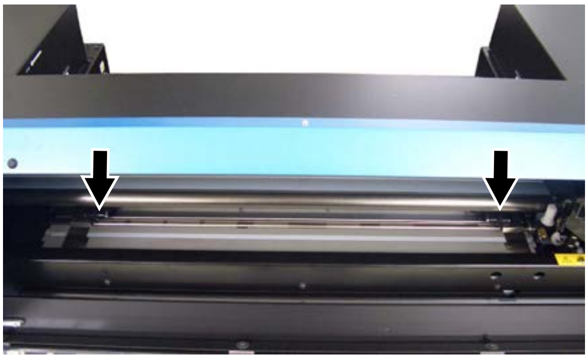
4-8 TOOL PRESSURE ADJUSTMENT (Referential Time : 15min)

This adjustment is to correct the tool pressure during cutting.

1 Install the White Dummy Pen (ST-006) to the Tool Holder.

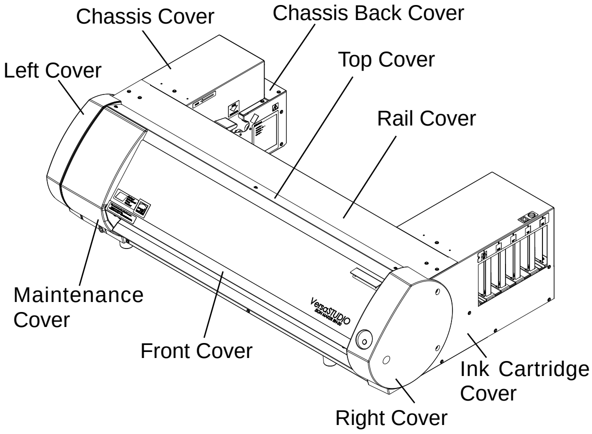

White Dummy Pen

2 Move the Pinch Rollers at the right and left ends of the Grit Rollers, and lower them.

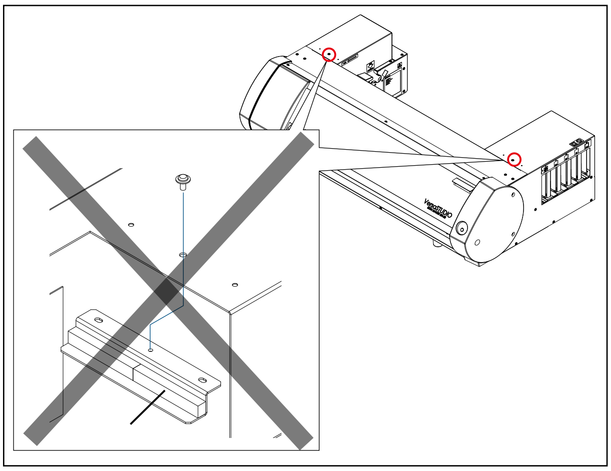


3 Remove the following covers in order.

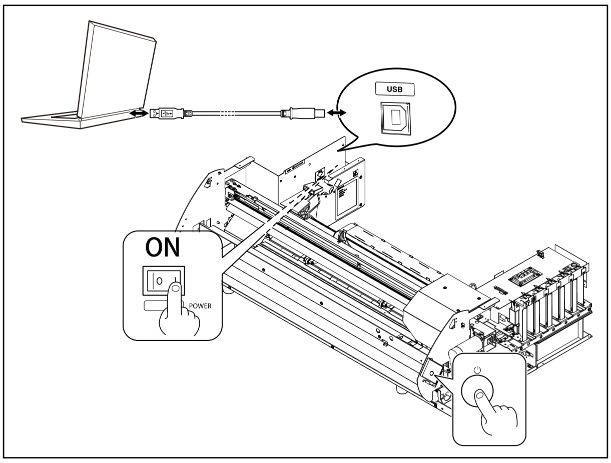
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover


Chassis Cover
Chassis Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover

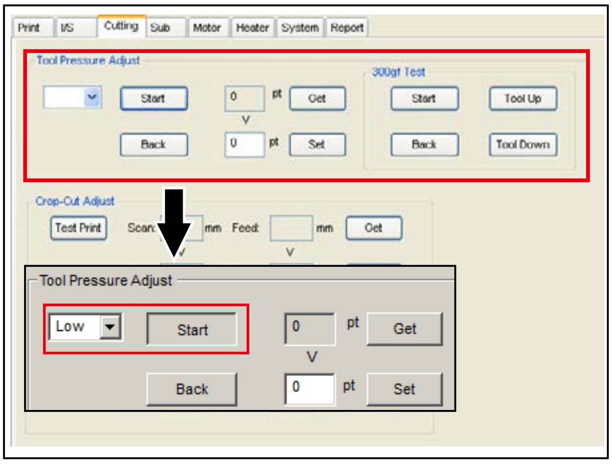
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.



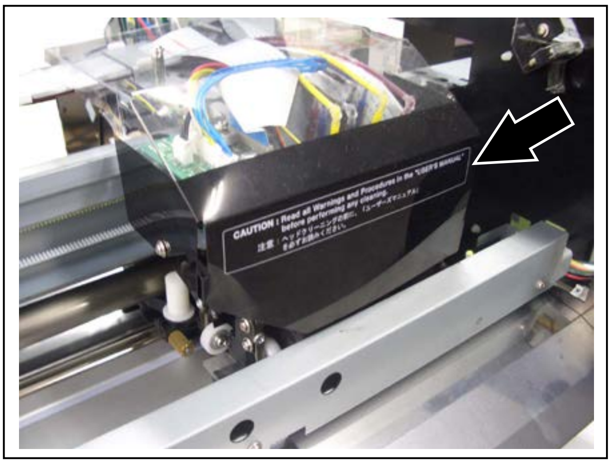
4 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.
Setup the media on the printer.


USB
ON
POWER

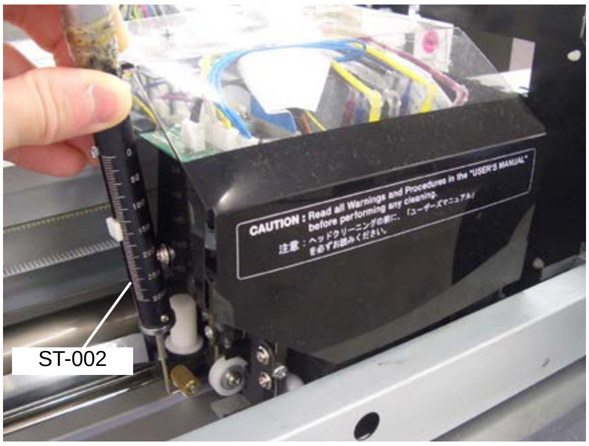
5 Strat up the Service Application and select [Cutting] tab. Then, select [Tool Pressure Adjust]>[Low] and click [Start].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
0 pt
Get
V
Back
0 pt
Set
300gf Test
Start
Tool Up
Back
Tool Down
Crop-Cut Adjust
Test Print
Scan: mm
Feed: mm
Get
V
V
Tool Pressure Adjust
Low
Start
0 pt
Get
V
Back
0 pt
Set

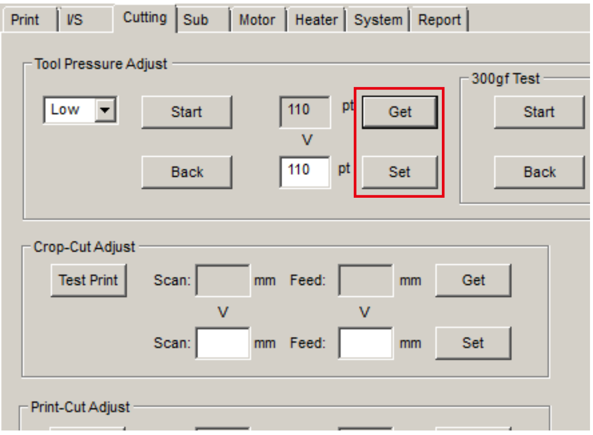
6 The Head Carriage moves to the position (right side of the bed) where you measure the low tool pressure (100gf).



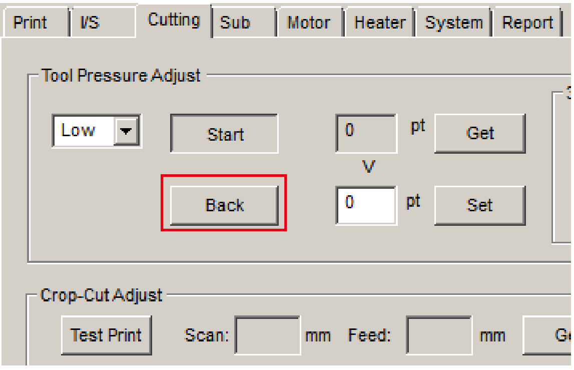
7 Lift up the Tool Holder with the Tension Gauge (ST-002) and measure the pressure when the pen tip leaves the bed.


ST-002
CAUTION : Read all Warnings and Procedures in the "USER'S MANUAL" before performing any cleaning.
注意：ヘッドクリーニングの前に、「ユーザーズマニュアル」を必ずお読みください。

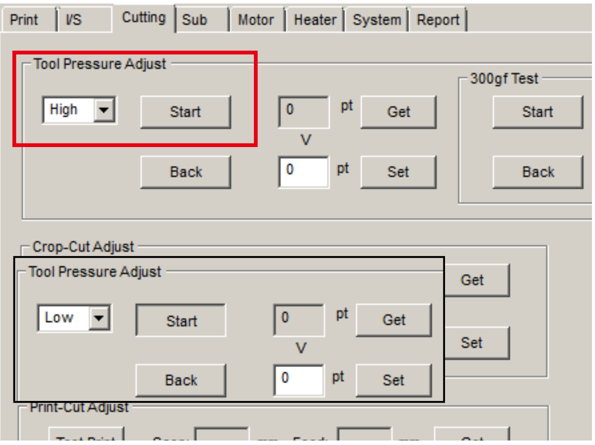
8 Input the tool pressure value measured in 7 into the blank box near [Set] and click [Set].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Low
Start
110 pt
Get
V
Back
110 pt
Set
300gf Test
Start
Back
Crop-Cut Adjust
Test Print
Scan: mm
Feed: mm
Get
V
V
Scan: mm
Feed: mm
Set
Print-Cut Adjust

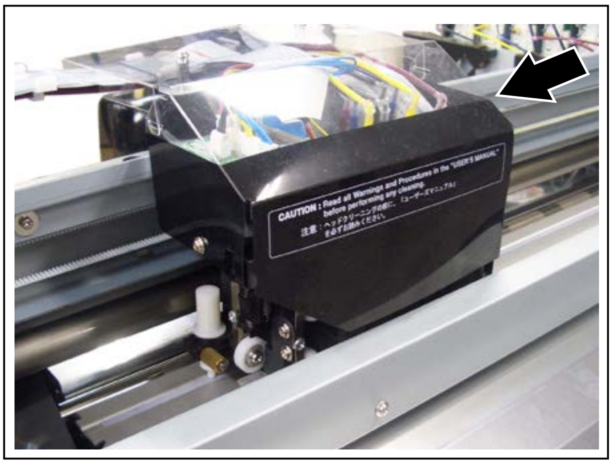
9 Click [Tool Pressure Adjust]>[Back] to finish the Tool Pressure Adjustment. Then, the Head Carriage moves to the capping position


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Low
Start
0 pt
Get
V
Back
0 pt
Set
Crop-Cut Adjust
Test Print
Scan: mm
Feed: mm

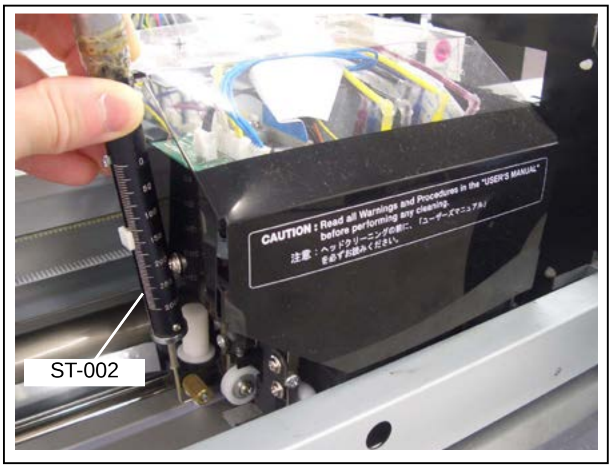
10 Select [Tool Pressure Adjust]>[High] and click [Start].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
High
Start
0 pt
Get
V
Back
0 pt
Set
300gf Test
Start
Back
Crop-Cut Adjust
Tool Pressure Adjust
Low
Start
0 pt
Get
V
Back
0 pt
Set
Get
Set
Print-Cut Adjust

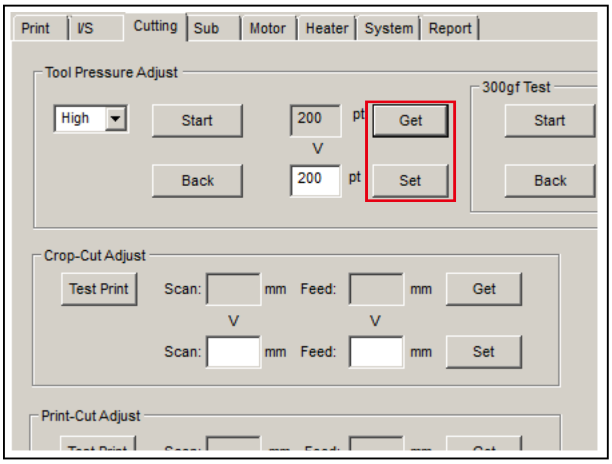
11 The Head Carriage moves to the position (left side of the bed) where you measure the high tool pressure (200gf).


CAUTION : Read all Warnings and Procedures in the "USER'S MANUAL" before performing any cleaning.
注意：ヘッドクリーニングの前に、「ユーザーズマニュアル」を必ずお読みください。

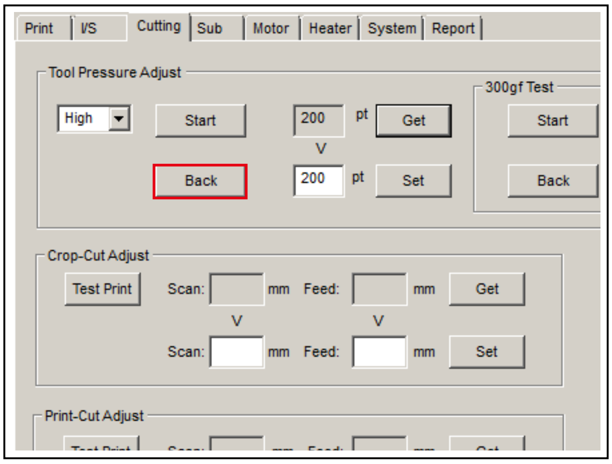
12 Lift up the Tool Holder with the Tension Gauge (ST-002) and measure the pressure when the pen tip leaves the bed.


ST-002
CAUTION : Read all Warnings and Procedures in the "USER'S MANUAL" before performing any cleaning.
注意：ヘッドクリーニングの前に、「ユーザーズマニュアル」を必ずお読みください。

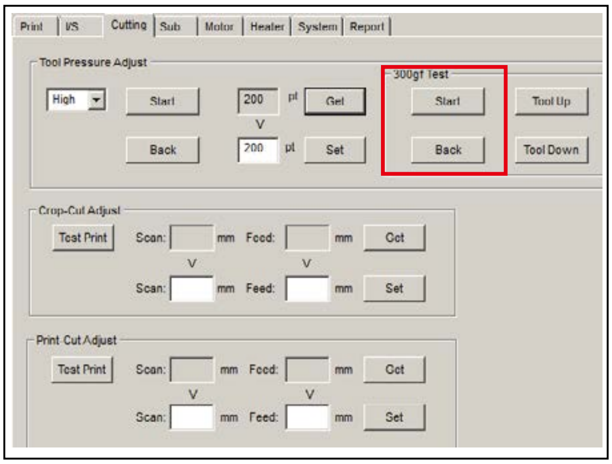
13 Input the tool pressure value measured in 12 into the blank box near [Set] and click [Set].


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
High
Start
200
pt
Get
V
Back
200
pt
Set
300gf Test
Start
Back
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set
Print-Cut Adjust

14 Click [Tool Pressure Adjust]>[Back] to finish the Tool Pressure Adjustment. Then, the Head Carriage moves to the capping position


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
High
Start
200
pt
Get
V
Back
200
pt
Set
300gf Test
Start
Back
Crop-Cut Adjust
Test Print
Scan:
mm
Feed:
mm
Get
V
V
Scan:
mm
Feed:
mm
Set
Print-Cut Adjust

15 Check whether the adjusted tool pressure is correct or not.
Click [Tool Pressure Adjust]>[300gf Test]>[Start].

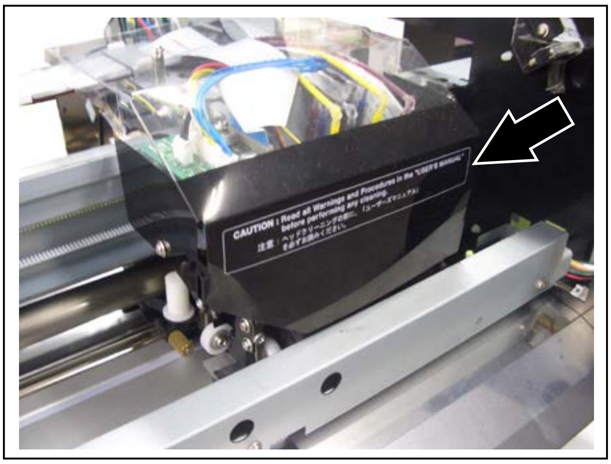

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Tool Pressure Adjust
Start
Back
Get
Set
300gf Test
Start
Back
Tool Up
Tool Down
Crop-Cut Adjust
Test Print
Get
Set
Print Cut Adjust
Test Print
Get
Set

High

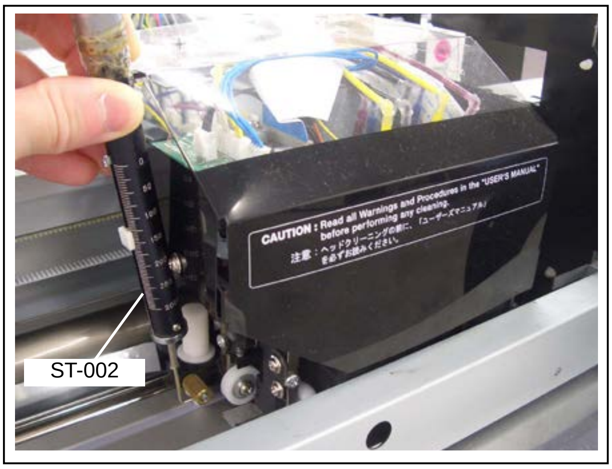
200 pt V 200 pt

Scan: mm Feed: mm

16 The Head Carriage moves to the position (right side of the bed) where you measure the 300gf tool pressure.

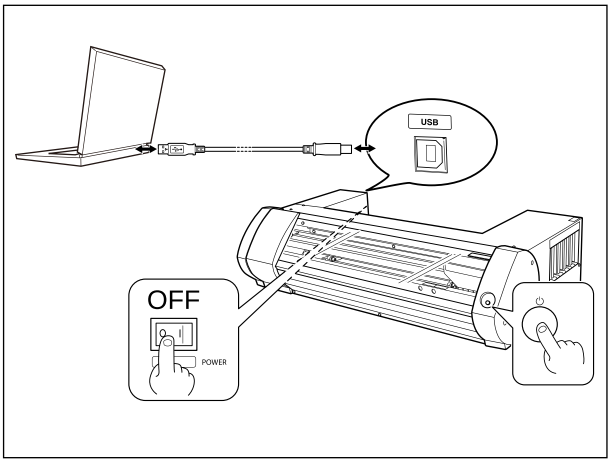


17 Lift up the Tool Holder with the Dial Gauge and measure the pressure when the pen tip leaves the bed.
When the measured pressure is 300 +/- 30gf, the tool pressure is correct.
If not, adjust the LOW and HIGH tool pressures again.



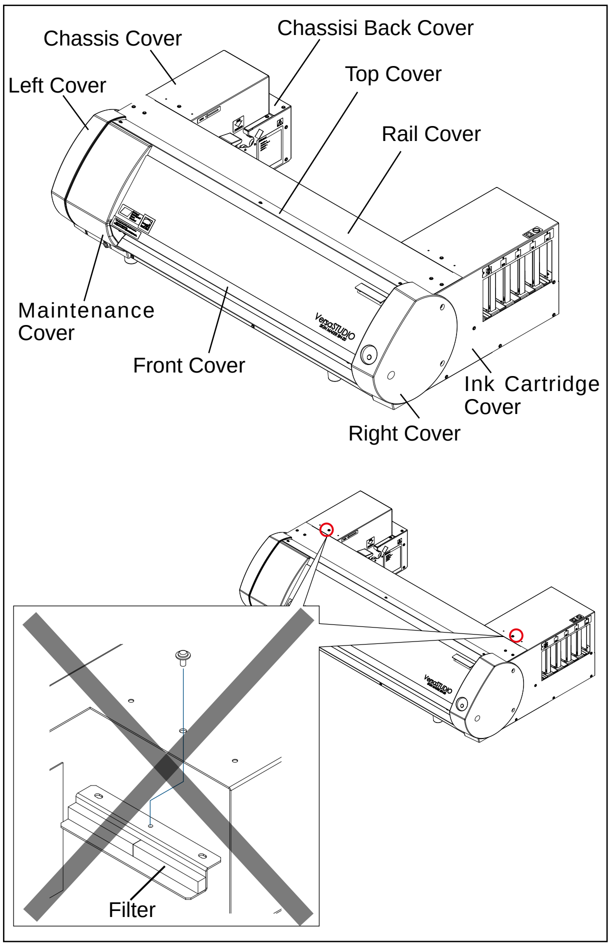
4-9 BELT TENSION ADJUSTMENT (Referential Time : 20min.)

1 Turn off the Main Power SW and Sub Power SW, then disconnect the printer with the USB cable.


USB
OFF
POWER

2 Remove the following covers in order.

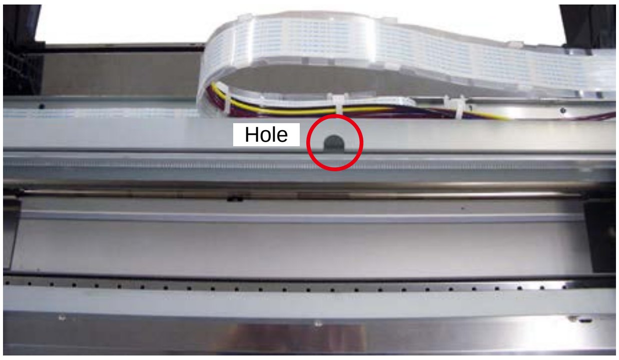
1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Top Cover
5. Chassis Back Cover
6. Chassis Cover
7. Ink Cartridge Cover
8. Rail Cover
9. Front Cover


Chassis Cover
Chassisi Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

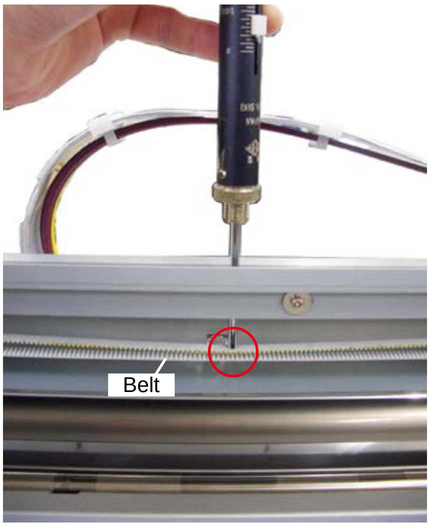
Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.

3 Measure the tension of the belt at the position where there is a hole on the Rail to insert Tension Gauge (ST-001)(*1).
Pull down the belt until its insides touch each other when you see it from the printer front(*2). The tension is proper if the measured value is 0.41kgf - 0.58kgf.
If the tension is improper, move on to the next step and adjust the belt tension.

<*1>

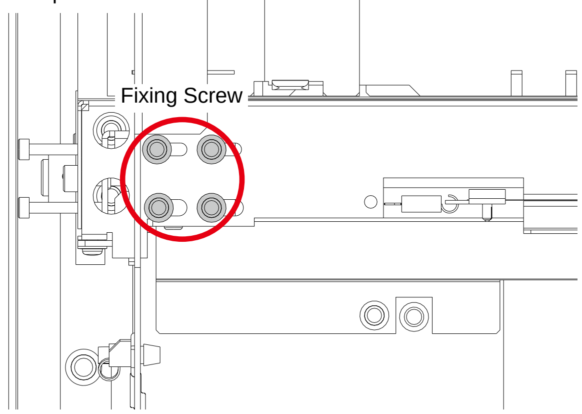


<*2>



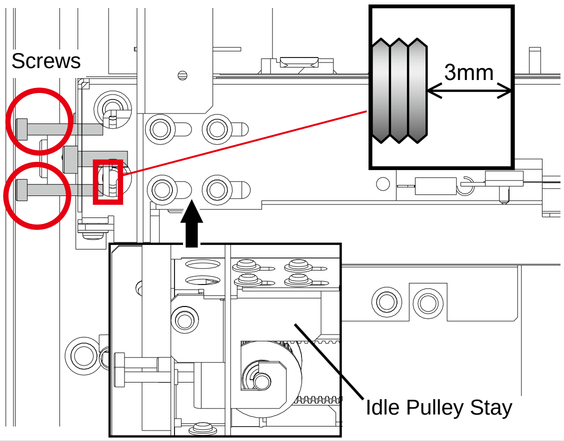
4 Loosen the four Fixing Screws which is located on the left end of the belt halfway round.

<Top view>

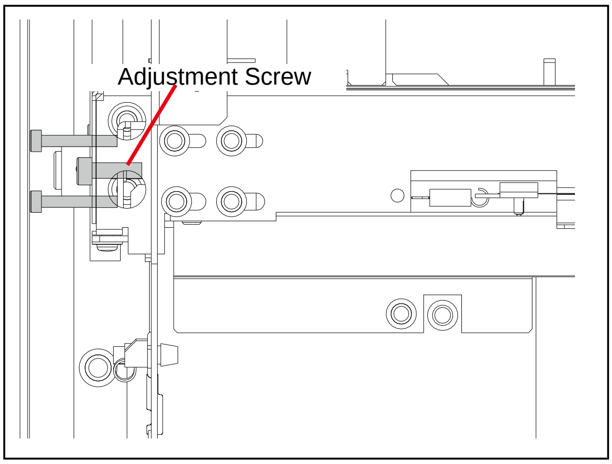


5 Loosen the two screws to make a gap of three millimeters between the tip of the screw and Idle Pulley Stay.
(The belt tension cannot be adjusted higher when the screw contacts with Idle Pulley Stay.)

The gap between the screws and Idle Pulley can be seen from front side of the printer.

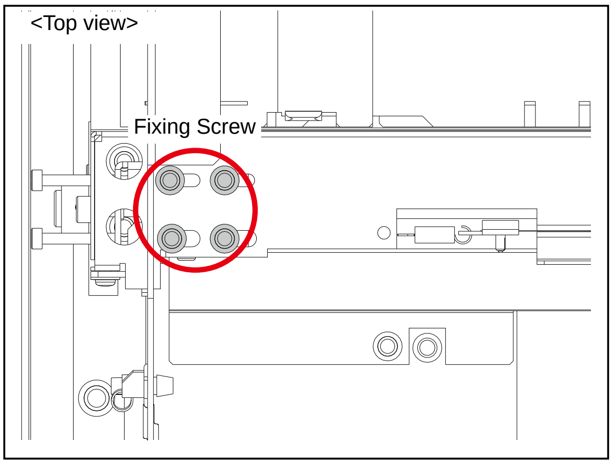


6 Turn the Adjustment Screw as shown in the figure to adjust the value of the tension gauge within acceptable range referring to 3.



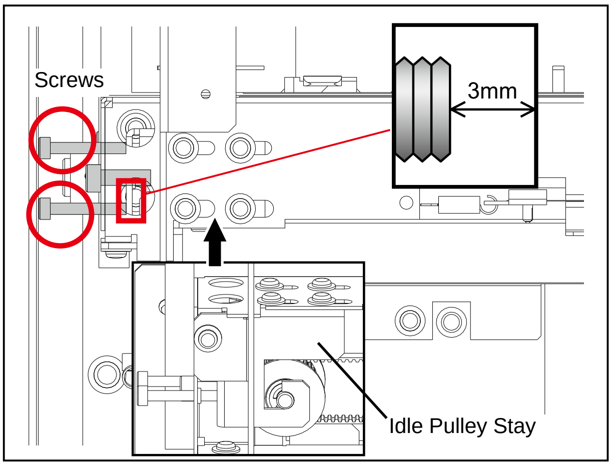
Turn the screw CW: Tension is increased
Turn the screw CCW: Tension is decreased

7 Tighten the four Fixing Screws shown in the figure, and again confirm that the tension is within the proper value.



8 Tighten the two screws shown in the figure to slightly contact with Idle Pulley Stay.

Move on to [4-10 BELT POSITION ADJUSTMENT].



Make sure not to tighten the screws too tight.
It may move the fixed Idle Pulley Stay accidentally.

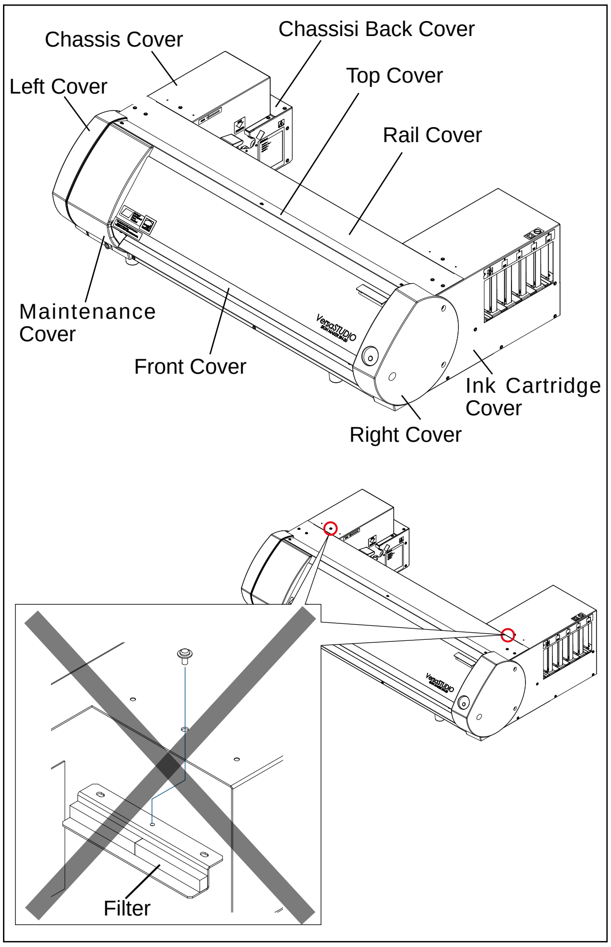
4-10 BELT POSITION ADJUSTMENT (Referential Time : 30min.)

This adjustment is to prevent the belt wear which is caused by the belt contacting with the pulley Flanges excessively. The belt position needs to be confirmed after the Belt Tension Adjustment and adjusted if it is necessary.

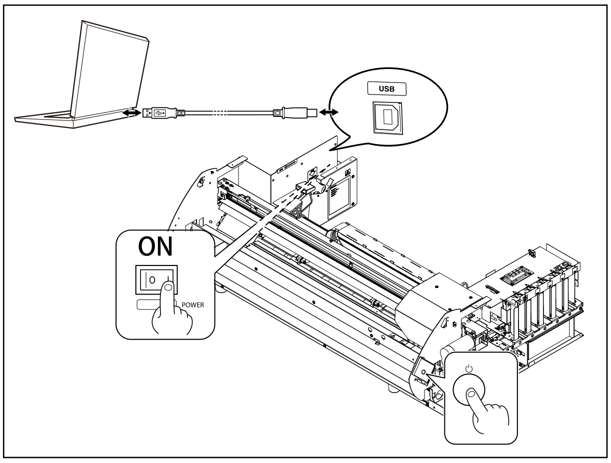
1 Remove the following covers in order.

1. Right Cover
2. Left Cover
3. Maintenance Cover
4. Front Cover
5. Top Cover
6. Chassis Back Cover
7. Chassis Cover
8. Rail Cover
9. Ink Cartridge Cover

Do not remove the screw shown in the figure. If you remove the screw, the filters are removed. When the filters are removed, the static electricity cannot come out.


Chassis Cover
Chassisi Back Cover
Left Cover
Top Cover
Rail Cover
Maintenance Cover
Front Cover
Ink Cartridge Cover
Right Cover
Filter

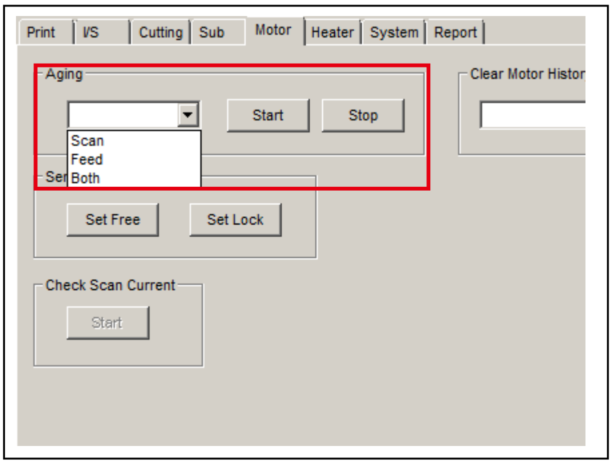
2 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.
Setup the media on the printer.


USB
ON
POWER

3 **[ADJUSTMENT ON THE DRIVE PULLEY SIDE]**

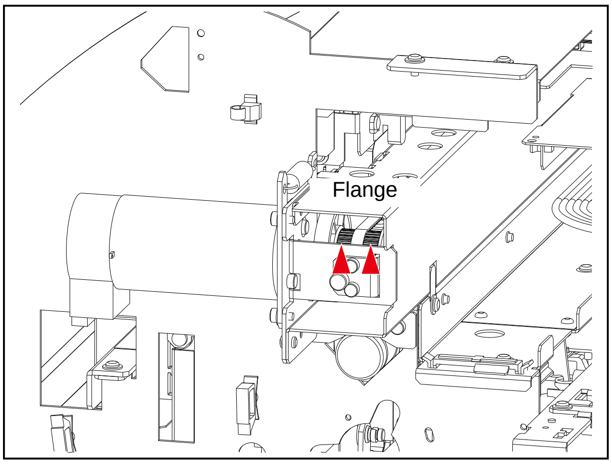
Perform the Aging test for the belt.

Strat up the Service Application and select [Motor] tab. Then, select [Aging]>[Scan] and click [Start].

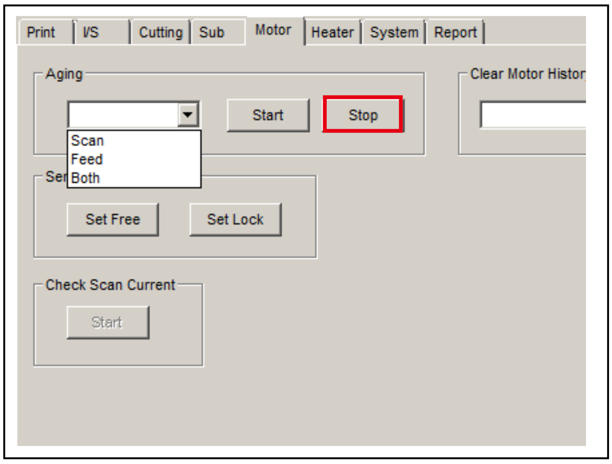

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor Histor
Scan
Feed
Both
Ser
Set Free
Set Lock
Check Scan Current
Start

4 Confirm the belt position.

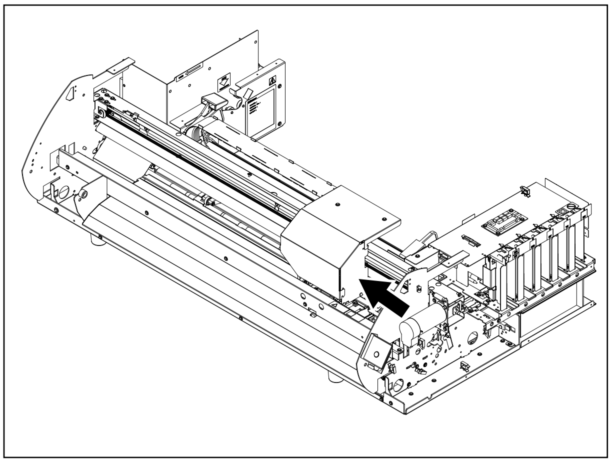
The position is proper when the belt is not touching the Flanges of the Drive Pulley excessively. When the position is proper, skip this adjustment and go to [ADJUSTMENT ON THE IDLE PULLEY SIDE] described in the later step of this adjustment leaving the belt aging on. When the position is improper, make adjustment as follows.



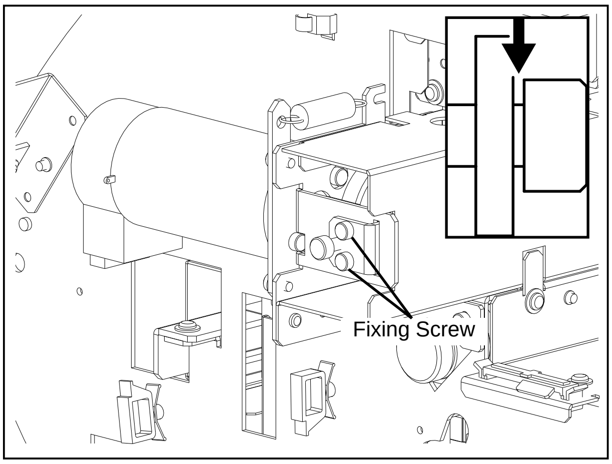
5 Click [Aging]>[Scan]>[Stop] to cancel Aging.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Clear Motor Histor
Scan
Feed
Both
Ser
Set Free
Set Lock
Check Scan Current
Start

6 Move the Head Carriage on the Bed.

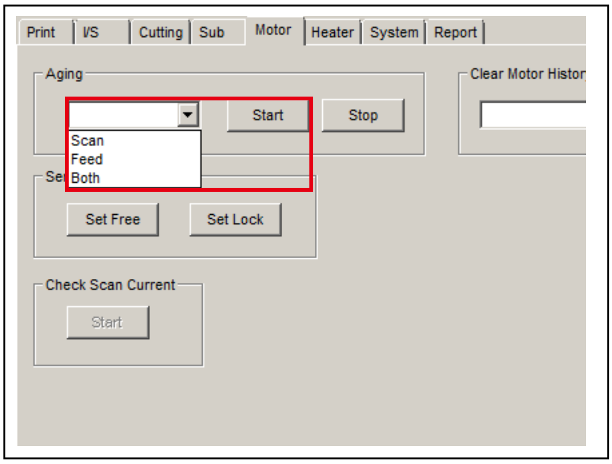


7 Loosen the two Fixing Screws located on the right end of the belt.


Fixing Screw

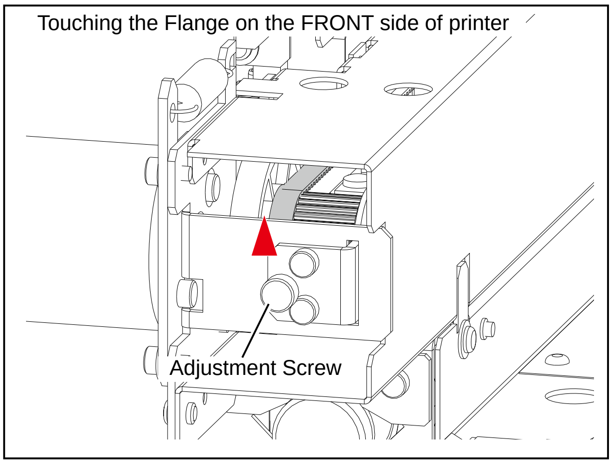
> Loosen the screws about a few rounds for the bottom of the screw head not to contact with the Stay.

8 **S**elect [Aging]>[Scan] and click [Start] to restart the aging.

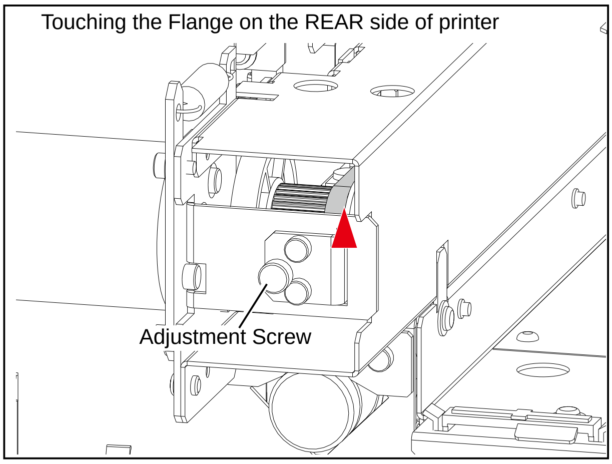

Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Scan
Feed
Both
Se
Set Free
Set Lock
Clear Motor Histor
Check Scan Current
Start

9 Adjust the belt position turning the Adjustment Screw as follows.

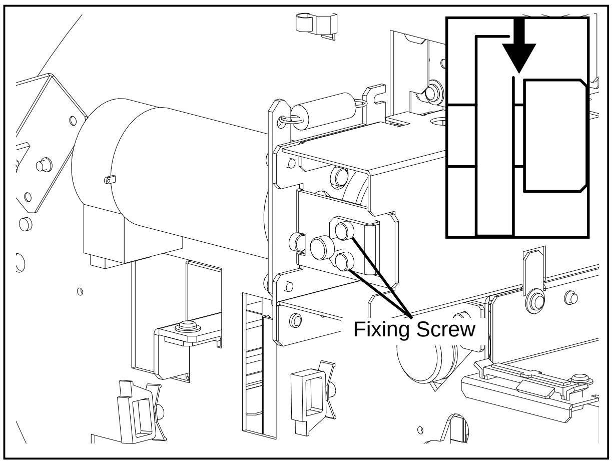
Belt leans to the front side of the printer
-Turn the screw carefully in CW (loosening).


Touching the Flange on the FRONT side of printer
Adjustment Screw

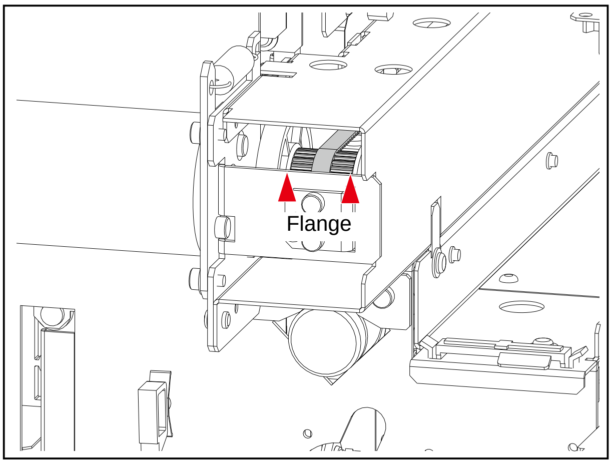
Belt leans to the rear side of the printer
-Turn the screw carefully in CCW (tightening).


Touching the Flange on the REAR side of printer
Adjustment Screw

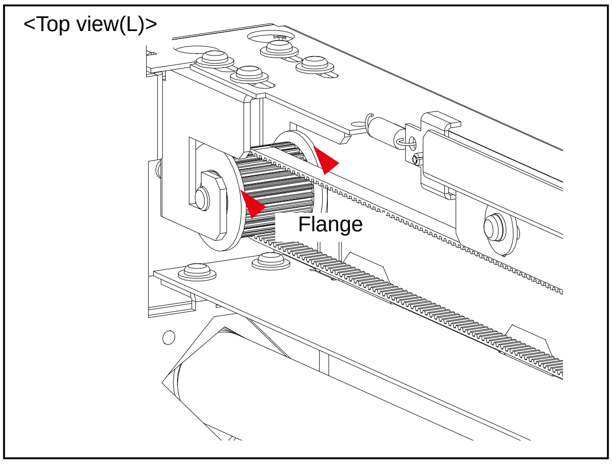
10 Tighten the two Fixing Screws for the bottom of the screw head to slightly contact with the Stay.


Fixing Screw

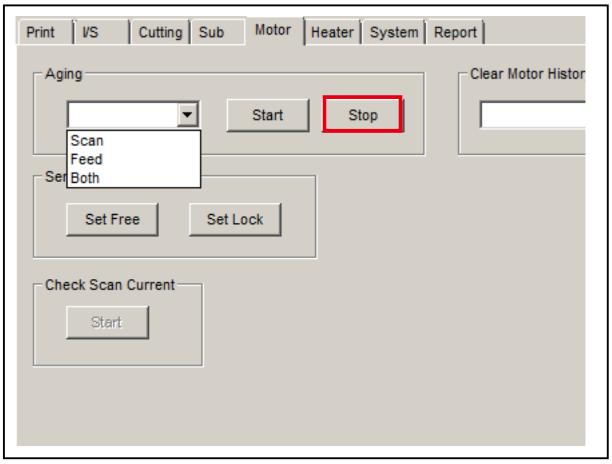
11 Confirm that the belt is not touching the pulley flanges excessively.
When the belt is in improper position, adjust it again.
When it is proper, leave the belt aging on, and go to the following [ADJUSTMENT ON THE IDLE PULLEY SIDE].



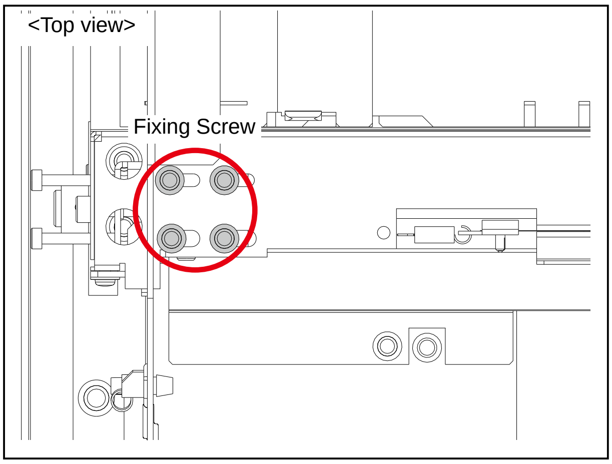
12 **[ADJUSTMENT ON THE IDLE PULLEY SIDE]**
Confirm the position of the belt.
The position is proper when the belt is not touching the Flanges excessively. When the position is proper, close this BELT POSITION ADJUSTMENT. When it is improper, make adjustment as follows.



13 Click [Aging]>[Scan]>[Stop] to cancel Aging.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Scan
Feed
Both
Ser
Set Free
Set Lock
Clear Motor Histor
Check Scan Current
Start

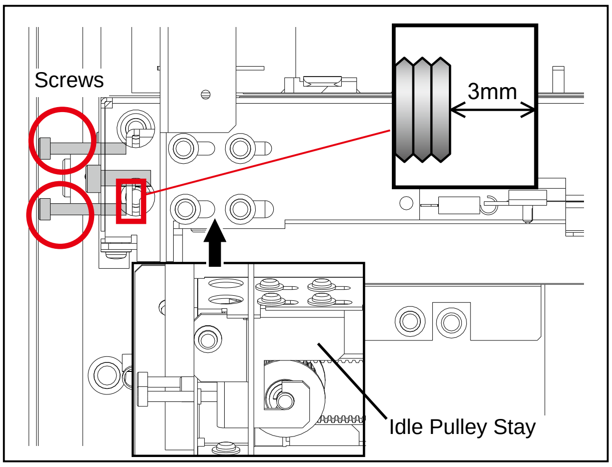
14 Loosen the four Fixing Screws located at the left end of the belt eighth to quarter round.



<Top view>
Fixing Screw

When the screw is loosened more than necessary, it gives difficulty in adjusting the belt. Also, you need to be careful with the sharp edges around it when turning the screws. It may cause injury.

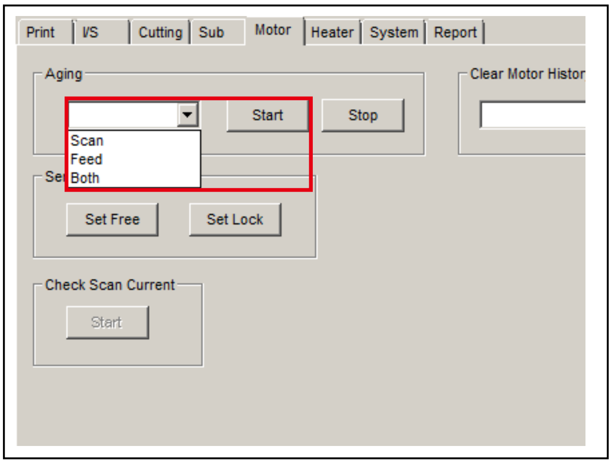
15 Loosen the two screws to make a gap of three millimeters between the tip of the screw and Idle Pulley Stay.
(The belt tension cannot be adjusted higher when the screw contacts with Idle Pulley Stay.)



Screws
3mm
Idle Pulley Stay

The gap between the screws and Idle Pulley can be seen from front side of the printer.

16 Select [Aging]>[Scan] and click [Start] to restart the aging.

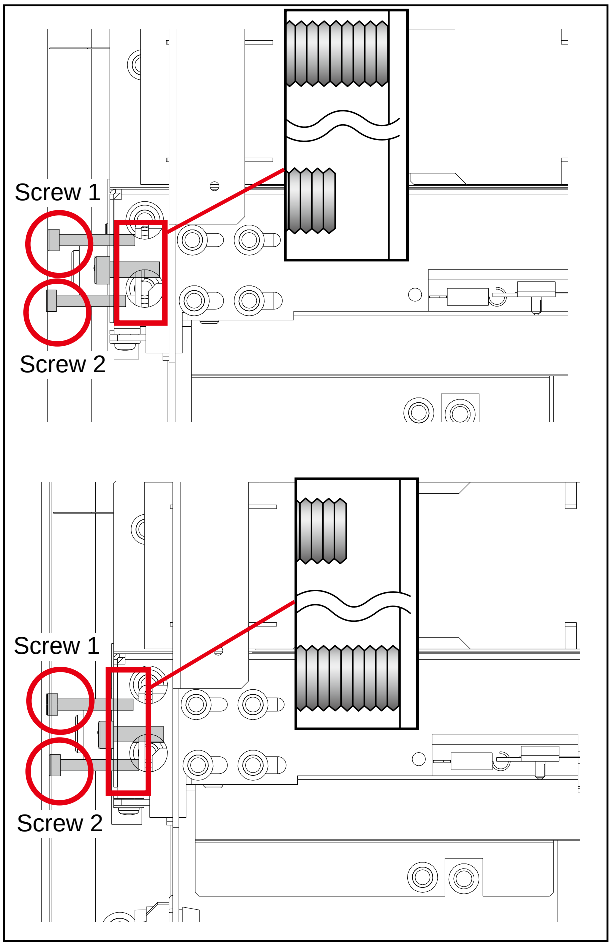


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Aging
Start
Stop
Scan
Feed
Both
Clear Motor Histor
Se
Set Free
Set Lock
Check Scan Current
Start

17 Adjust the belt position turning the screw 1 and 2 as follows.

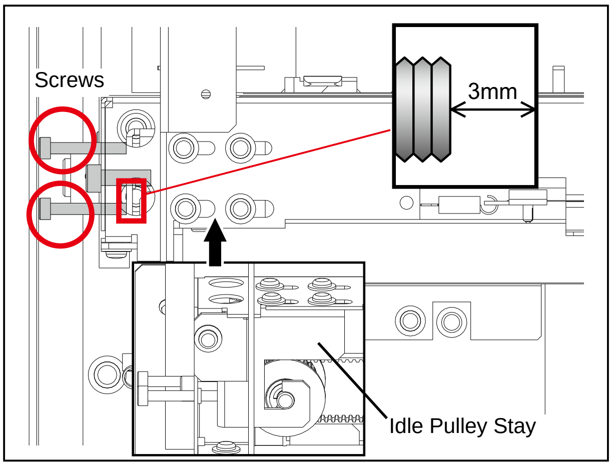
Belt leans to the front side of the printer
-Turn the screw 1 carefully in CW to press it to the Idle Pulley Stay.
* Make sure to have a gap of three millimeters between the screw 2 and Idle Pulley Stay when turning the screw 1.

Belt leans to the rear side of the printer
-Turn the screw 2 carefully in CW to press it to the Idle Pulley Stay.
* Make sure to have a gap of three millimeters between the screw 1 and Idle Pulley Stay when turning the screw 2.



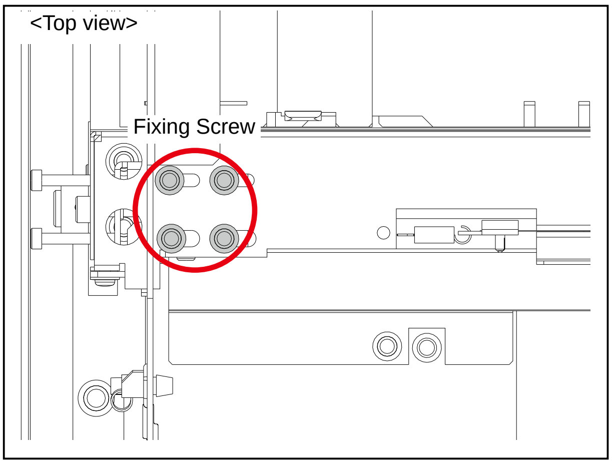
18 Tighten one of the screws that has no contact with the Idle Pulley Stay to slightly touch the Idle Pulley Stay.

Make sure not to tighten the screws too tight.
It may move the Idle Pulley Stay accidentally.



19 Tighten the four fixing screws as shown in the figure.

Be careful with the moving Carriages and also with the sharp edges of the mechanical parts around it.

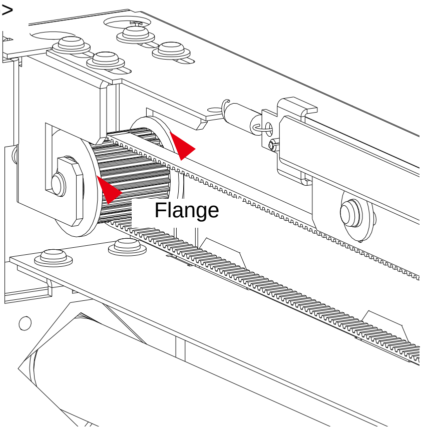


20 Confirm that the belt is not touching the Pulley Flanges excessively.

When the belt is in improper position, adjust it again.

When it is proper, click [Aging]>[Scan]>[Stop] to cancel Aging.

<Top view(L)>

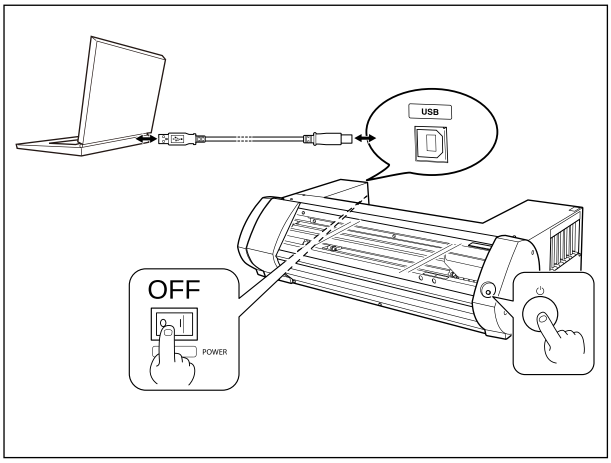


Revised 1

4-11 FLUSHING POSITION POSITION ADJUSTMENT (Referential Time : 5min.)

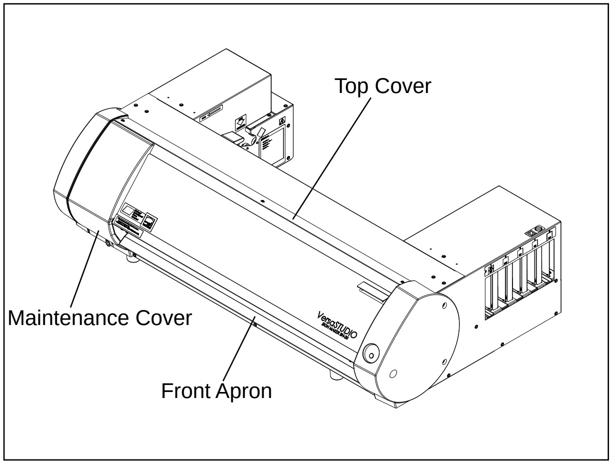
This is to adjust the flushing position. Without this adjustment, the Flushing may not be performed properly.

1 Turn off the Main Power SW and Sub Power SW, then disconnect the printer with the USB cable.

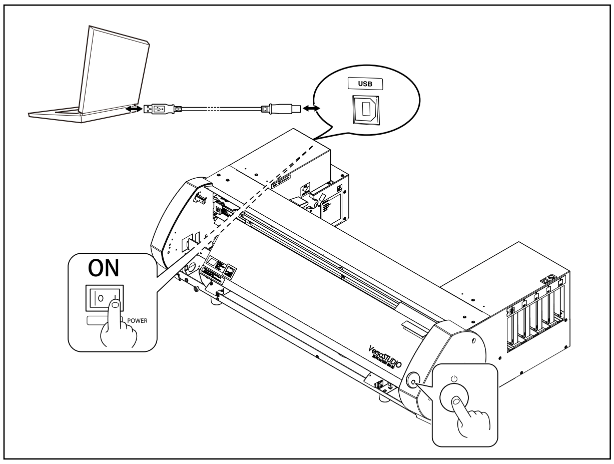

USB
OFF
POWER

2 Remove the following covers in order.

1. Maintenance Cover
2. Top Cover
3. Front Apron

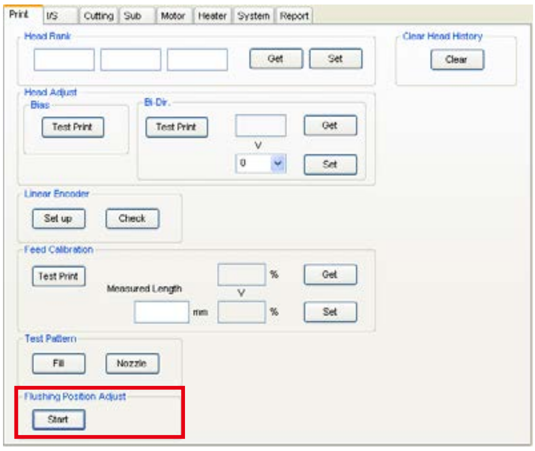

Top Cover
Maintenance Cover
Front Apron

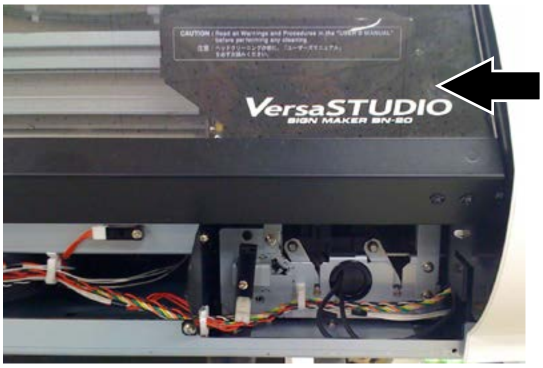
3 Turn on the Main Power SW and Sub Power SW, then connect the printer with the USB cable.


USB
ON
POWER

4 Strat up the Service Application and select [Print] tab. Then, click [Flushing Position Adjust]>[Start].

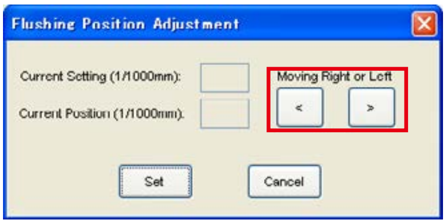
The Head Carriage moves to the current flushing position.


Print
I/S
Cutting
Sub
Motor
Heater
System
Report
Head Rank
Get
Set
Clear Head History
Clear
Head Adjust
Bias
Test Print
Bi-Dir.
Test Print
Get
0
Set
Linear Encoder
Set up
Check
Feed Calibration
Test Print
Measured Length
mm
%
%
Get
Set
Test Pattern
Fill
Nozzle
Flushing Position Adjust
Start


VersaSTUDIO
SIGN MAKER BN-20

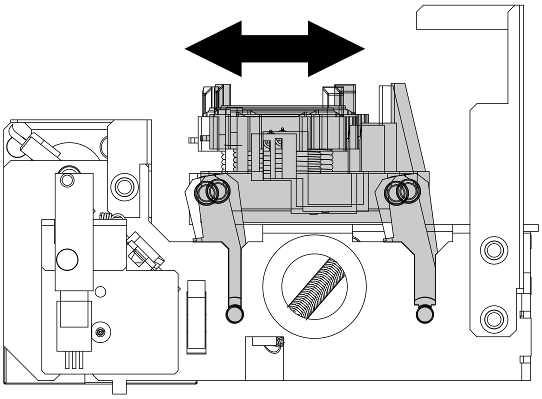
5 [Flushing Position Adjustment] window shown in the figure is displayed.

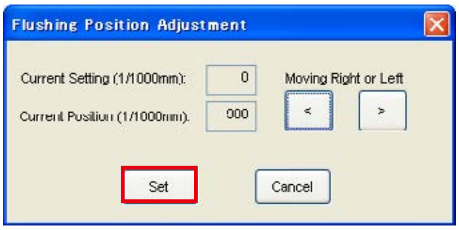
When you click [Moving Right or Left] > [<] or [>], the Head Carriage moves to right or left.


Flushing Position Adjustment
Current Setting (1/1000mm):
Current Position (1/1000mm):
Moving Right or Left
<
>
Set
Cancel

Move the Head Carriage from left to right by [>] button.

The position where the Cap Top is about to float (move) is the flushing position. Click [Set] when the Cap Top is about to float (move).




Flushing Position Adjustment
Moving Right or Left
<
>
Set
Cancel

Current Setting (1/1000mm): 0

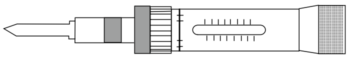
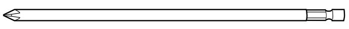
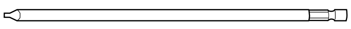
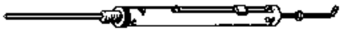
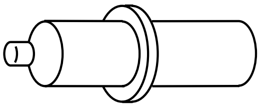
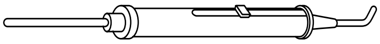
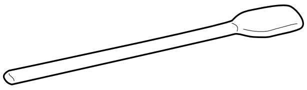
Current Position (1/1000mm): 900

5 Supplemental Information

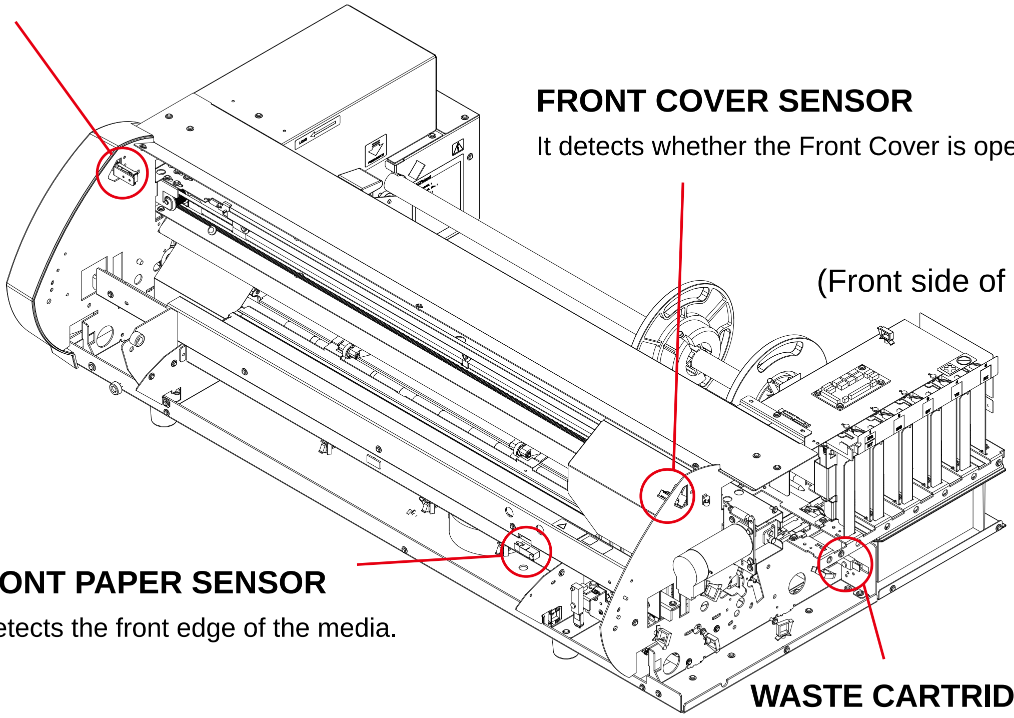
5-1 Special Tools

△17

Table shows a list of special tools recommended by Roland DG Corp.

Parts No.	ST-056	
Parts Name	TORQUE DRIVER N6	
Purpose	HEAD ALIGNMENT	
Parts No.	1000005463	
Parts Name	TOOL,BIT PHILLIPS NO.1 L150MM ST-107	
Purpose	HEAD ALIGNMENT	
Parts No.	1000006902	
Parts Name	TOOL,BIT HEXAGONAL ST-118	
Purpose	HEAD REPLACEMENT	
Parts No.	ST-002	
Parts Name	TENSION GAUGE 300GF/300CN	
Purpose	TOOL PRESSURE ADJUSTMENT	
Parts No.	ST-006	
Parts Name	WHITE DUMMY PEN	
Purpose	TOOL HEIGHT ADJUSTMENT TOOL PRESSURE ADJUSTMENT	
Parts No.	ST-001	
Parts Name	TENSION GAUGE 2000GF/2000CN	
Purpose	BELT TENSION ADJUSTMENT	
Parts No.	~~ST-037~~ 1000003138	
Parts Name	~~CLEANING STICK TX712A~~ SET,CLEANER STICK TX712A 10PCS.	
Purpose	HEAD CLEANING	
Parts No.	21755107	
Parts Name	CLEANING LIQUID(SL) 500ML	
Purpose	HEAD CLEANING (SOL)	
Parts No.	21755102	
Parts Name	CLEANING LIQUID,500ML CJ-70	
Purpose	HEAD CLEANING (PIG/DYE)	

5-2 SENSOR MAP



MAINTENANCE COVER SENSOR

It detects whether the Maintenance Cover is opened or closed.

FRONT COVER SENSOR

It detects whether the Front Cover is opened or closed.

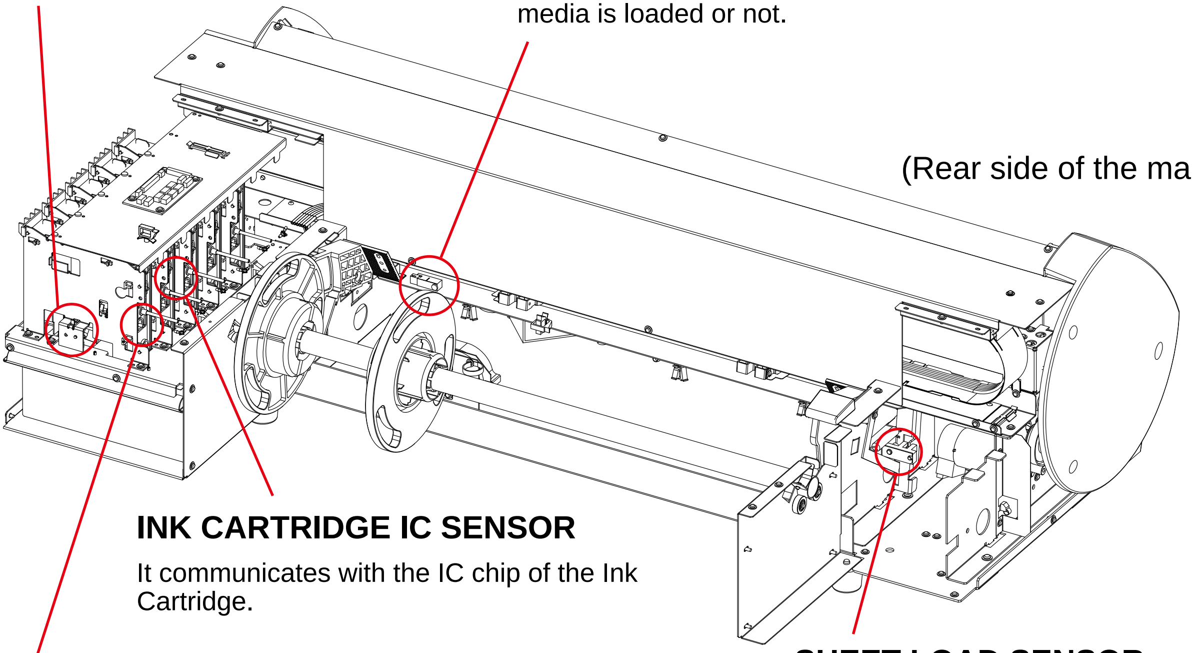
(Front side of the machine)

FRONT PAPER SENSOR

It detects the front edge of the media.

WASTE CARTRIDGE SENSOR

It detects whether the Waste Cartridge is installed or not.



INK EMPTY SENSOR

It detects whether the Ink Cartridge is empty or not.

REAR PAPER SENSOR

It detects the rear edge of the media and also whether the media is loaded or not.

(Rear side of the machine)

INK CARTRIDGE IC SENSOR

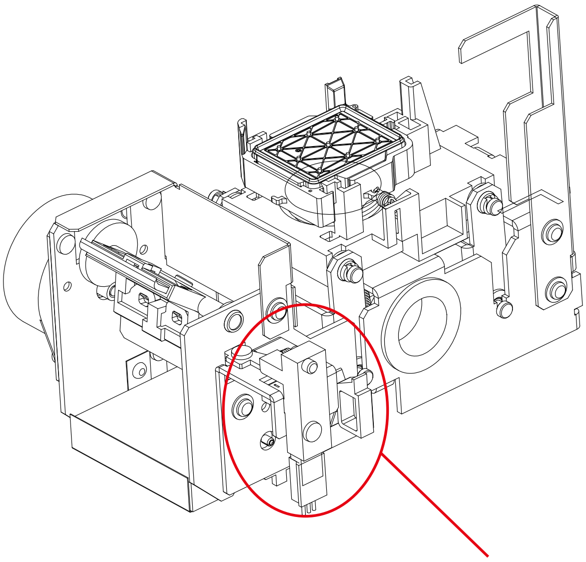
It communicates with the IC chip of the Ink Cartridge.

SHEET LOAD SENSOR

It detects whether the Sheet Loading Lever is UP or DOWN.

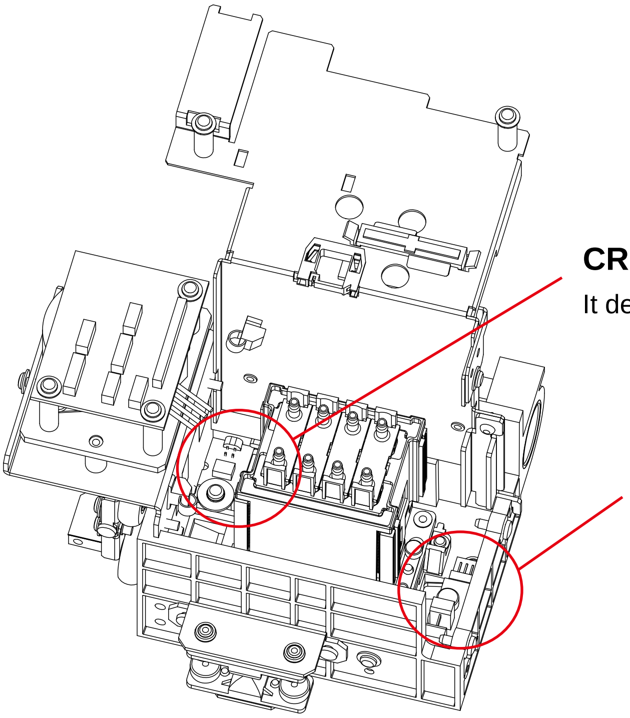
INK CARTRIDGE SENSOR

It detects whether the Ink Cartridge is installed or not.



WIPER SENSOR

It detects the limit position of the Wiper movement.



CROP MARK SENSOR

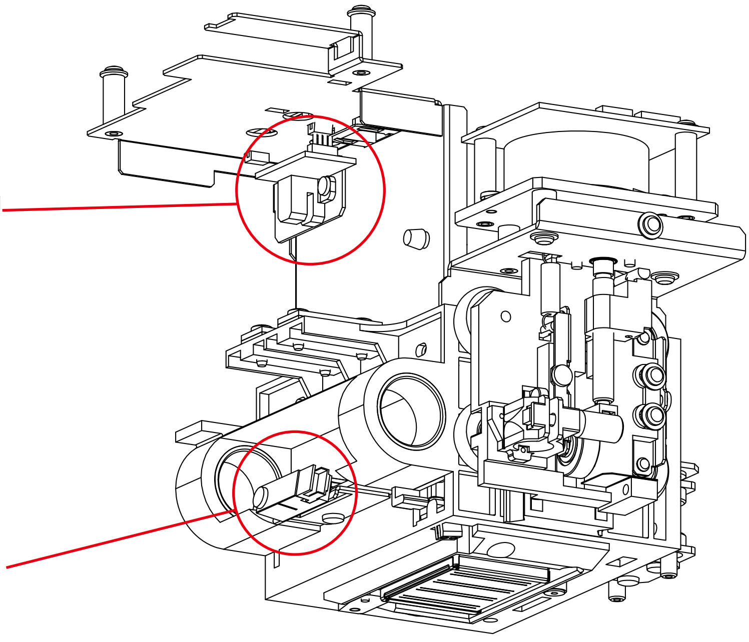
It detects the Crop Mark.

CAPPING POSITION SENSOR

It detects the capping position.

ENCODER MODULE

It detects the coordinates in the carriage moving direction, and also generates the print signal.

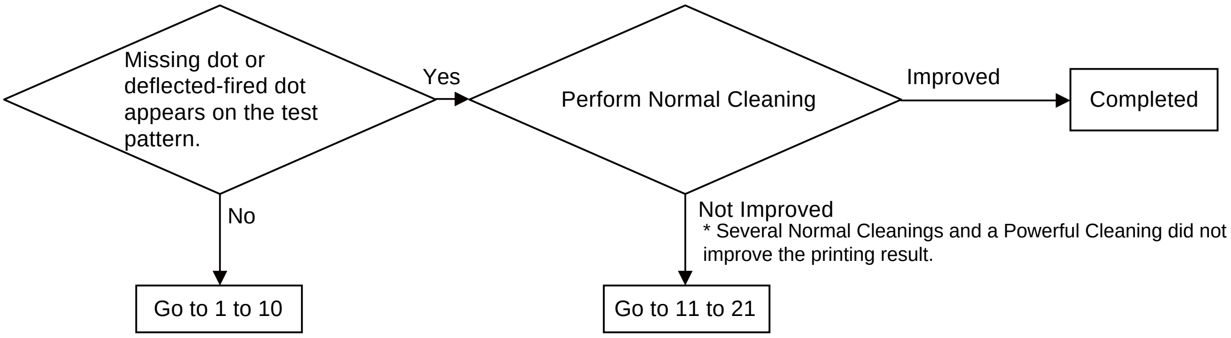


PINCH ROLLER SENSOR

It detects the positions of Pinch Roller.

6 Troubleshooting

6-1 WHITE FINE LINE / BANDING / MISSING DOT / SCRATCHY PRINTING / BLURRED PRINTING


Missing dot or deflected-fired dot appears on the test pattern.
Yes
Perform Normal Cleaning
Improved
Completed
No
Go to 1 to 10
Not Improved
* Several Normal Cleanings and a Powerful Cleaning did not improve the printing result.
Go to 11 to 21

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	The machine is not installed in an appropriate location	Install in a location that is level and stable offering good operating conditions		Never install the machine in a location where it is tilted or where it may wobble or librate.
2	The media is not set up correctly	Load and set up the media at the correct position	User's Manual	Feed is not smooth when the media is tilted or tensioned unevenly on the left or right. Reload and set up the media correctly.
3	Temperature of the Heater is inappropriate	Set appropriate temperature	User's Manual	The heater may not warm up sufficiently when the ambient temperature is less than 20°C (68°F). Also, even when the heater warms up, an adequate effect may not be obtained if the media is thoroughly chilled. Before printing, allow the media to come to room temperature.
4	The media is not appropriate	Use other media		The substrate which stretches or shrinks considerably or the one which does not absorb the ink efficiently cannot be used.
5	FEED CALIBRATION is not correct	Correct Calibration	User's Manual	If the calibration is not correct, white fine line caused by gaps or dark line caused by overlapping appears.
6	Wrong driver setting	Perform the appropiate driver setting	User's Manual	
7	Wrong profile for the media	Use the suitable profile		
8	Head Rank is not correct	Set Head Rank	[3-1 HEAD REPLACEMENT]	Head Rank setting affects the amount of the ink fired. If it is not set properly, the ink dots are not fired in appropriate sizes.
9	Head is not adjusted	Adjust Head	[4-3 HEAD ALIGNMENT]	Check whether [BIAS] setting is correct.
10	Ink agitation in the ink cartridge	Shake the cartridges gently	User's Manual	The message to shake the cartridges is displayed periodically. If you do not follow the message, the ink generates high or low density inside to bring about inappropriate printing result.
11	Defect of Cap Top	Replace Cap Top	[3-5 CAP TOP REPLACEMENT]	Cleaning does not work effectively and the nozzle condition cannot be improved. Also, if the head is not capped correctly, the head dries and it may cause the nozzle clog.
12	Revised 10 ~~Air inside the ink damper~~	~~Perform [CHOKE CL]~~	~~[3-2 DAMPER REPLACEMENT]~~	~~If the ink damper has the air inside, the ink is supplied intermittently. Therefore, it causes missing dots or deflected dots.~~
13	Foreign substances	Perform Manual Cleaning	User's Manual	Nozzle condition becomes poor due to the foreign substances stuck on the surface of the Head.

6-1 WHITE FINE LINE / BANDING / MISSING DOT / SCRATCHY PRINTING / BLURRED PRINTING

NO	CHECK	ACTION	REFERENCE	OUTLINE
14	Wiper scraper is dirty/ wears out	Replace/clean Wiper scraper	[3-8 WIPER SCRAPER REPLACEMENT]	When the wiper scraper is direty or wears out, it cannot wipe all ink on the Wiper and the wiping is performed with the ink on the Wiper. As a result, the remained ink attaches on the Head surface and ink is not fired correctly.
15	The wrong fitting direction of the wiper	Refit the wiper	User's Manual	The wiper has its fitting direction. If the wiper is fitted in the wrong direction, wiping cannot be done efficiently.
16	Wiper wears out	Replace Wiper	[3-3 WIPER / FELT WIPER REPLACEMENT]	Wiping does not work effectively and foreign substances left on the head surfaces cannot be removed completely.
17	Felt wiper wears out	Replace Felt Wiper	[3-3 WIPER / FELT WIPER REPLACEMENT]	The felt wiper is to absorb the ink on the print head surface. When absorbing performance is low, cleaning cannot be done efficiently.
18	Cap top tube is wrongly mounted	Correct mounting of Cap top tube	[3-4 CAP TOP REPLACEMENT]	The cap top's tube is in correct length for proper pumping. If the tube is mounted wrongly or cut in shorter length, pumping cannot be done appropriately.
19	Head nozzle is clogged	Clean the head surface using the cleaning stick (Manual Cleaning)		Generally, we do not recommend to wipe the surface of Head with a cleaning stick. Howerver, it is worth trying before replacing the Head. Soak the cleaning stick in cleaning liquid fully, and then tap and lightly rub the surface of Head with it.
20	Broken Head	Replace Head	[3-1 HEAD REPLACEMENT]	
21	Broken Pump	Replace Pump		Ink suction during cleaning does not work and the nozzle condition cannot be improved.

6-2 POOR PRINTING QUALITY WHEN USING THE METALLIC SILVER INK (for BN-20 only)

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Heater temperature is not appropriate	Set appropriate temperature	User's Manual	If the temperature settings of Print heater and Dryer are not appropriate to dry the metallic silver ink, the ink may not dry. The ambient temperature should be appropriate to obtain the correct temperature of heaters as specified.
2	Media is not appropriate	Use appropriate media		If the media is not appropriate for the metallic silver ink, the ink may not settle on the media.
3	Density of the metallic silver ink is not appropriate	Adjust the density of metallic silver ink		If too much ink is fired, the ink may not dry and the printing surface may not look shiny. Adjust the density on the drawing software or VersaWorks.
4	Way of creating print data is not appropriate	Check created print image		The metallic silver ink can not cover up the color underneath it. If the color underneath the metallic silver ink is visible, do not overlap the area specified for metallic silver and CMYK when creating print image, or select the spot color from the Roland color library.

6-3 MIXED COLOR IS PRINTED AT THE METALLIC SILVER SPECIFIED AREA

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Way of creating print data or printing mode is not appropriate	Check created print image / printing mode		Mixed color will be printed if the CMYK area is overlapped with RDG_MetallicSilver. Do not overlap the metallic silver area and CMYK area when creating print job, or select the spot color from the Roland color library.

6-4 PARTICULAR COLOR IS NOT PRINTED AT ALL

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Defect of Cap Top	Replace Cap Top	[3-4 CAP TOP REPLACEMENT]	If the Head is not capped correctly, ink suction for one color may not be done. And, the Head dries and it may cause the nozzle clog.
2	Ink Cartridge is almost empty	Check remaining Ink / Replace the Ink Cartridge	User's Manual	When the machine keeps printing with ink cartridge almost empty, the negative pressure delivered in the ink tube causes the improper ink supplying and the head cannot fire the ink correctly.
3	Error of Ink Empty detection	Replace the ink cartridge / sensor		If the cartridge tab does not stick out when the cartridge is empty, Ink Empty cannot be detected and printing continues without ink firing. Also, if the sensor is not working, Ink Empty cannot be detected even if the cartridge tab sticks out.
4	Bad contact / Broken cable	Refix / Replace the cable		If there is a bad communication between the head and the Main Board, the signal for driving head is not sent properly and results in improper printing. If the Flexible cable is fixed slanted, it may cause the bad electrical contact or shortcircuit. And, the cable which has been connected and disconnected several times may have a damaged terminal.
5	Air bubbles in Ink line	Revised 10 ~~Remove air bubbles with Service Menu [CHOKE CL]~~		~~When air bubbles are inside the Ink line, the head may not fire the Ink temporarily. Air bubbles tend to go into the Ink lineif Ink Cartridge is installed and uninstalled many times.~~ ~~The air bubbles inside the lines can be removed by performing [CHOKE CL] in the service menu.~~
		Eliminate the looseness of the tube joint		If the tube has air due to the looseness of the tube joint, fix the joint and remove the air.
6	Broken Ink Tube	Replace Ink Tube	[3-15 INK TUBE REPLACEMENT]	
7	Broken Head	Replace Head	[3-1 HEAD REPLACEMENT]	
8	Broken Main Board	Replace Main Board	[3-9 BOARDS REPLACEMENT]	

6-5 SHIFTING IN PRINTING/COLOR SHIFTING

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	The media is set tilted	Set the media correctly	User's Manual	If media is not set straight, it comes loose on the Platen and it wrinkles, and results in shifting. Set the media straight referring to the User's Manual.
2	Encoder Scale is dirty / broken	Clean or replace Encoder Scale	[3-11 ENCODER SCALE REPLACEMENT]	When Encoder Scale is not read correctly, printing position may shift.
3	Encoder Module is dirty / broken	Clean or replace Encoder Module		When Encoder Module does not read Encoder Scale correctly, printing position may shift.
4	Bad contact of Flexible Cable	Refix / Replace the Flexible Cable		If the Flexible Cable is not fixed correctly, the Head moves incorrectly and results in the shift in printing.

6-6 INK DROPS ON THE MEDIA

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Foreign substances	Perform Manual Cleaning	User's Manual	When foreign substances such as fiber dust are stuck on the surface of the Head, Ink sometimes leaks from it. Wipe the surface of Head with a cleaning stick.
2	Media strikes Head	Use the media clamps / Replace to the suitable media		If media tends to curl or become bumpy due to the Ink absorption, the Head sometimes strikes the media and it causes the Ink dropping problem.
3	Wiper scraper is dirty/ wears out	Clearn/replace Wiper scraper	[3-8 WIPER SCRAPER REPLACEMENT]	When the wiper scraper is dirty/wears out, it cannot wipe all ink on the Wiper and the wiping is performed with the ink on the Wiper. As a result, the remained ink attaches on the Head surface and ink drops on the media.
4	Felt wiper wears out	Replace Felt Wiper	User's Manual	The felt wiper is to absorb the ink on the print head surface. When absorbing performance is low, the ink remains on the Wiper. As a result, the remained ink attaches on the Head surface and ink is not fired correctly.
5	Wiper wears out	Replace Wiper	User's Manual	Cleaning does not work effectively with worn wiper. Therefore, foreign substances stuck on the head surface cannot be removed completely and the ink flows through it and results in ink dropping.
6	Broken ink tube	Replace Ink Tube	[3-15 INK TUBE REPLACEMENT]	When the ink tube is broken, it is not possible to keep the ink line air tight and results in ink dropping.

6-7 VERTICAL BANDING

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Encoder Scale is dirty	Clean / Replace Encoder Scale	[3-11 ENCODER SCALE REPLACEMENT]	When there is a scratch or dirt on the Encoder Scale, the printing image could be affected and the vertical bandings could appear at the position where there is a scratch or dirt.
2	Rail Shaft is dirty	Clean Rail Shaft		When the sliding resistance with the moving Head Carriage increases partly due to some dirt on the Rail Shaft, it may affect the printing at the position where there is dirt and the vertical banding may appear.
3	There is dirt in teeth of the gear	Clean the gear		When there are foreign substances on the teeth of the gear, the movement of the Head Carriage changes at the position where there is dirt. And it results in the periodical vertical banding.

△25

6-8 MISSING DOT OR DEFLECTED DOT APPEARS WHEN PRINTING AFTER A LONG INTERVAL

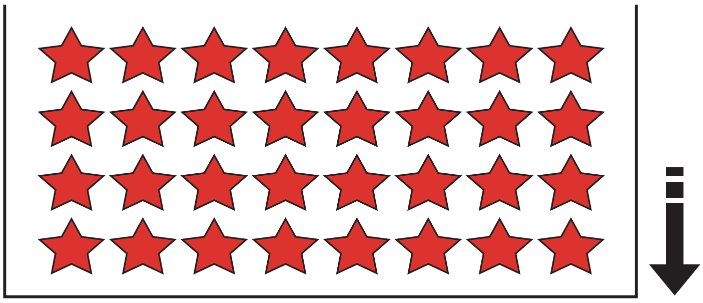
NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Check the main power switch	Do not switch off the main power	User's Manual	When the main power is off, the maintenance flushing is not performed and it may cause the nozzle clog. Make sure to turn the power on / off with only the sub power switch for daily use.
2	Ink agitation in the ink cartridge	Gently shake the cartridge	User's Manual	The message to shake the cartridges is displayed periodically. If you do not follow the message, the ink generates high or low density inside to bring about inappropriate printing result.
3	Periodic ink circulation is not working (BN-20/BN-20D)	Perform ink circulation / Check the cable connection of circulation pump / Check the ink lines including the circulation pump	[4-1 SERVICE APPLICATION]	If the ink circulation is not performed, the ink settles and separates. The precipitated material may be solidified and cause clogging of the print heads or other malfunction.

6-9 UNWANTED LINES ARE PRINTED

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Encoder Scale is dirty / broken	Clean or replace Encoder Scale	[3-11 ENCODER SCALE REPLACEMENT]	If the Encoder Scale has any fine dust on it, some unwanted lines may be printed on that area.

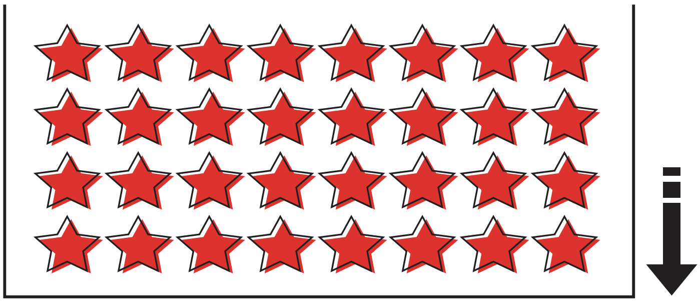
6-10 PRINT & CUT MISALIGNMENT

Ideal Conditions



The above illustration shows the ideal print and cut conditions where the red stars signify the printed image and the black lines signify the cut path. Since the actions to be taken are different depending on the conditions of shifting, check how cutting is shifted first and take appropriate actions. Most of the actions can be done by users.

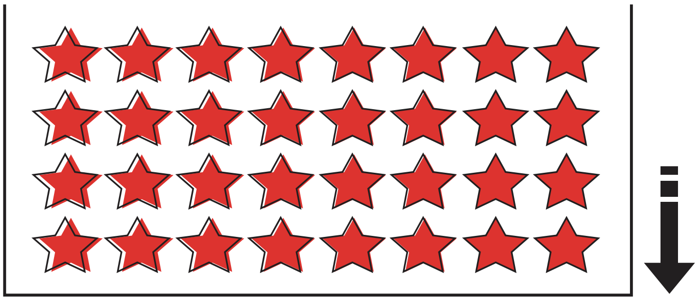
Symptom 1 : Cut is Shifted in the Same Direction for the Same Amount



Possible Causes
Print & Cut adjustment is not correctly done.

Actions
1. Perform [Bidirectional Adjustment] of the Utility.
2. Perform [Print and Cut Adjustment] of the Utility.

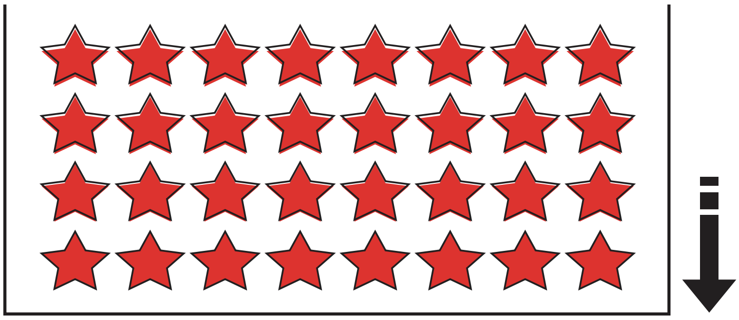
Symptom 2 : Cut is OK at Right Side but is Getting Shifted as It Goes to the Left Side



Possible Causes
1. Expansion / Contraction of the Encoder Scale
2. Expansion / Contraction of the media
3. There is a problem in reading the Encoder Scale

Actions
1. Perform [Bidirectional Adjustment] of the Utility.
2. Perform [Print and Cut Adjustment] of the Utility.
3. Use the crop marks.
4. Clean or replace the Encoder Scale.

Symptom 3 : Cut is OK at Lead Edge but is Getting Shifted as It Goes to the End of Print

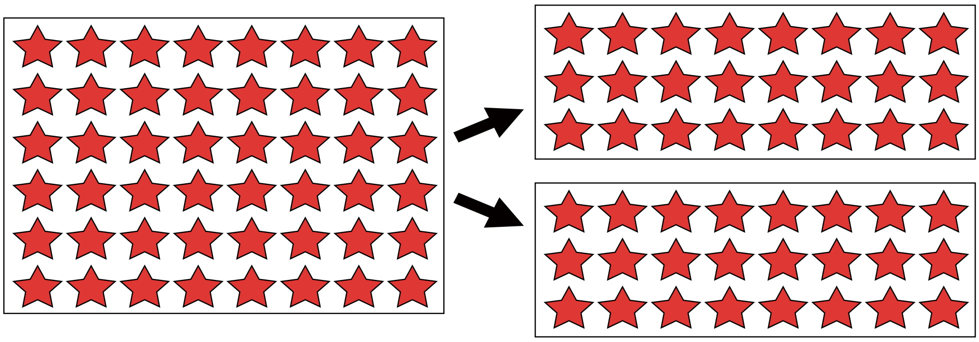


Possible Causes

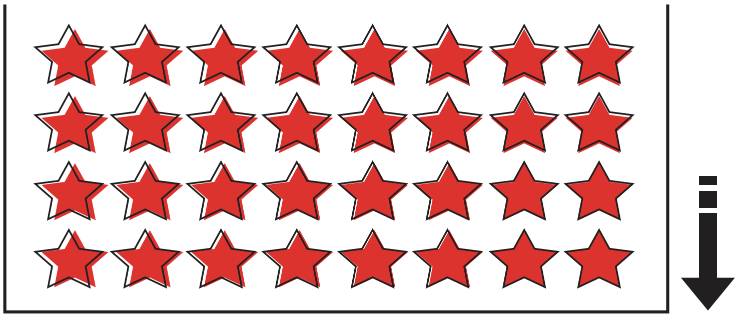
1. Expansion/Contraction of the media
2. Strong back tension of the heavy roll media causes the media to be fed less than it should be when printing.

Actions

1. Prefeed the media to make it unrolled before starting a printing to decrease the back tension.
2. Use the crop marks.
3. Divide the file into 2 or more and output them as separate jobs in order to make the feeding distance of each job shorter.



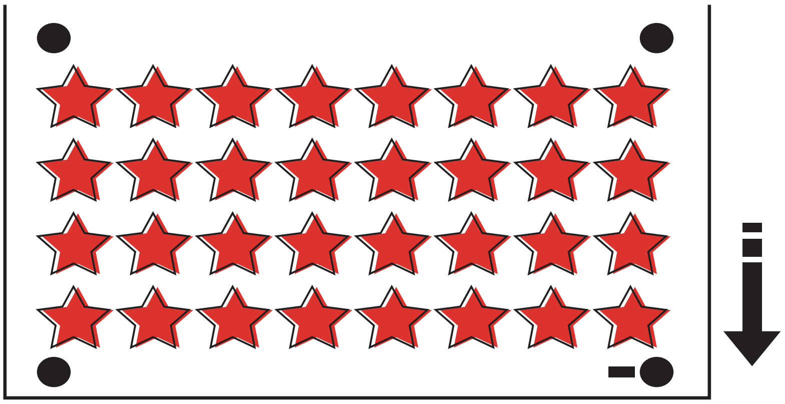
Symptom 4 : Symptom1, 2 and 3 are Mixed or Details are Not Clear



Actions

1. Perform [Bidirectional Adjustment] of the Utility.
2. Perform [Print and Cut Adjustment] of the Utility.
3. Prefeed the media to make it unrolled before starting a printing to decrease the back tension.
4. Set the lower value in [Cut Adjustment]>[Cut Speed] of the Utility.
5. Divide the file into 2 or more and output them as separate jobs in order to make the feeding distance of each job shorter.
6. Use the crop marks.
7. Adjust the belt tension.
8. Clean or replace the Encoder Scale.

Symptom 5 : Cut is Shifted When Using Crop Marks



Possible Causes
1. Crop-cut adjustment is not correctly done.

Actions
1. Perform [Bidirectional Adjustment] of the Utility.
2. Perform [CropCut Adjustment] of the Utility.

6-11 POOR CUTTING QUALITY (STITCH CUT, DISTORTED CUT, MISMATCHED START AND END POINTS)

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Firmware version	Upgrade Firmware	[4-2 HOW TO UPGRADE FIRMWARE]	When the firmware version is 1.10 and blow, the cutting tool stays lower than the designed height. Then, the cutting tool tip could hit the media clamp and cracks.
2	Shape of Media Clamp	Replace Media Clamp		When the Media Clamp warps upward even if you upgrade the firmare, the cutting tool tip could hit the media clamp and cracks.
3	Blade Holder is fixed loose	Fix the Blade Holder tightly		
4	Blade-offset setting is not correct	Set the blade-offset correctly		
5	Cutting force is not correct	Adjust Tool pressure	[4-8 TOOL PRESSURE ADJUSTMENT]	
6	Blade tip is worn out	Replace the Blade		
7	Blade Holder tip is caught by the media	Do not use the Blade Holder tip		Depending on the surface condition or the types of media, Blade Holder tip gets caught by the substrate and it results in stitch cut.
8	Bearing inside Blade Holder does not rotate smoothly	Replace the Blade Holder		
9	Scratches in Cutter Protection	Replace the Cutter Protection		

6-11 POOR CUTTING QUALITY (STITCH CUT, DISTORTED CUT, MISMATCHED START AND END POINTS)

NO	CHECK	ACTION	REFERENCE	OUTLINE
10	Tool does not move up / down smoothly	Replace the Tool Motor	[3-6 TOOL MOTOR REPLACEMENT]"	
11	Holder part of Tool Carriage is loose	Replace the Tool Carriage Holder		
12	Backlash of Motor Gear	Adjust Backlash		When there is a backlash at the Scan motor or Feed motor, Tool Carriage and Grit Roller will be driven unstable and results in symptoms such as mismatched start and end points.
13	Belt Tension is not correct	Adjust Belt Tension		
14	IC on Main Board is damaged	Replace Main Board		When the driver IC that drives Tool Motor is damaged, rarely abnormal tool pressure is given. In this case, the blade hits the bed and jumps when it goes down and it results in stitch cutting.

6-12 MEDIA SKEW

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Fixing of the Media Flange	Fix the Media Flanges firmly	User's Manual	If the Media Flanges are not fixed firmly, the media cannot be fed because the Media Holders are unstable.
2	Media is not set straight to the machine	Setup Media again	User's Manual	The most effective measure against Media shifting is to set Media straight to the machine. Especially on lengthy printing, small tilt of Media setup results in big Media shifting while printing.
3	Grit Roller is dirty	Clean the Grit Roller		When dust such as pieces of vinyl is stuck to the Grit Roller, ability to hold Media decreases and it results in Media shifting. Use a brush to clean the Grit Roller.
4	Pinch Roller is worn out	Replace the Pinch Roller	[3-12 PINCH ROLLERS REPLACEMENT]	When pinch rollers wear out, ability to hold media decreases and it results in media shifting.
5	Grit Roller is loose	Fix the Grit Roller		

6-13 FEED / SCAN MOTOR ERROR

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	The machine is not used in a proper way.	Check how to use the machine		When you perform the following operation, the Motor Error occurs. 1. Pull or Move the Carriage by hands. 2. Carriage runs into a thing or hands. 3. Media is pulled forcedly.
2	Media Jamming	Remove cause of Media Jamming		Feed is not smooth when the media is tilted or tensioned unevenly on the left or right. Reload and set up the media correctly.
3	Back tension of media is too high	Use appropriate Media		When using hard-to-unroll or too heavy media, Motor Error occurs due to over load for feeding the media.
4	There is a dirt in teeth of Drive Gear	Clean Drive Gear		When the Drive Gear has dirt on its teeth and cannot rotate, the Motor Error occurs.
5	The grease lubrication of the motor gear	Lubricate the grease to the motor gear		When the grease lubrication of the motor gear is not enough, the motor gears cannot rotate correctly and the Motor Error occurs.
6	Carriage Belt fixation is loose. (Only Scan direction)	Fix Carriage Belt firmly		When the Carriage Belt is not fixed firmly, the Head Carriage cannot move correctly and the Motor Error occurs.
7	The teeth of the Carriage Belt jumps. (Only Scan direction)	Fix Carriage Belt again		When the Carriage Belt jumps, the big load is added to the motor after the Head Carriage moves. It results in the Motor Error.
8	Drive Pulley is broken.	Replace Drive Pulley		When the Drive Pulley or the bearing in the Drive Pulley is broken or reaches its life, the big load is added to the motor after the Head Carriage or the Grit Roller moves. It results in the Motor Error.
9	Idle Pulley is broken. (Only Scan direction)	Replace Idle Pulley		When the Idle Pulley or the bearing in the Idle Pulley is broken or reaches its life, the big load is added to the motor after the Head Carriage moves. It results in the Motor Error.
10	Motor is broken or comes to its end of life	Replace Motor	[3-6 CARRIAGE MOTOR REPLACEMENT, 3-7 FEED MOTOR REPLACEMENT]	When the Motor is broken or reaches its end of life, the Motor cannot follow the order from the CPU and it results in a Motor Error.
11	Main Board is broken	Replace Main Board	[3-9 BOARDS REPLACEMENT]	When the Motor Driver ISs are broken, the Power Supply voltage for the motor is not supplied and the motor cannot move. It results in the Motor Error.
12	Power Supply for Motor is broken	Replace Switching Power Supply	[3-9 BOARDS REPLACEMENT]	When the Power Supply voltage for the Motor is not supplied, the Motor cannot move and it results in the Motor Error.

6-14 HEATER TEMPERATURE DOES NOT RISE

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	The media is not loaded	Set up the media	User's Manual	
2	Temperature of the Heater is inappropriate	Set appropriate temperature	User's Manual	The heater may not warm up sufficiently when the ambient temperature is less than 20°C (68°F). Also, even when the heater warms up, an adequate effect may not be obtained if the media is thoroughly chilled. Before printing, allow the media to come to room temperature.
3	Media width is too small	Use a wider media		A narrow media may take a long time to heat because it is subject to be cooled by a suction fan.
4	The voltage of power supply is unstable	Check the voltage		If the voltage is unstable, the heater cannot function fully.
5	Bad contact or cut line on the cable between Heater Unit and Main Board	Re-fix / Replace the cable		If the cable between the Heater unit and Main Board is broken, the Heater temperature does not rise. Check the connection of the each cable or replace it if it is broken.
6	Fuse on Power Board is broken	Replace Fuse on Power Board		The temperature of the Heater does not rise if the Fuse F1 is blown out on the Power Board.
7	Power Board is broken	Replace Power Board		The Heater does not work correctly because the signal to the Heater is not transferred correctly.
8	Main Board is broken	Replace Main Board		The Heater does not work correctly because the signal to the Heater is not transferred correctly.

6-15 PROBLEM IN USB CABLE (RIP DOES NOT RECOGNIZE THE PRINTER)

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	Turn off the main power and restart the printer			It can be solved by restarting the printer with the main power. Try it several times.
2	Refix the cable			It can be solved by refixing the USB cable. Try it several times.
3	USB cable length	Use USB cable in a lenght of less than 5m.		When you use an USB cable in a length of more than 5m, the communication speed is reduced and it is not possible to communicate with the machine.
4	USB cable is damaged	Replace USB cable		When an USB cable is damaged, it is not possible to communicate with the machine.
5	Main Board is damaged	Replace Main Board		Main Board may be damaged if the problem is not solved by the measures above.

6-16 ERROR MESSAGE

NO	CHECK	ACTION	REFERENCE	OUTLINE
1	SERVICE CALL	Restart the machine		Restart the machine and see if the same error occurs again.
		Refer to SERVICE CALL as follows	[6-17 SERVICE CALL]	
		Upgrade the firmware to the latest version		Check the revision record of the firmware version and upgrade it if the error has been solved in the firmware.

6-17 SERVICE CALL

CODE	EXPLANATION	CAUSE	ACTION
0102	Capping Position Sensor is ON when it should be OFF, or vice versa.	Capping Position Sensor does not work correctly or is broken. Carriage is not located at the correct position.	Capping Position Sensor replacement Check the mechanical backlash or loose with the scan axis related parts.
0109	Wiper unit does not work correctly.	Wiper Unit hits the Carriage Wiper Motor error Defect of Wiper Unit Defect of Wiper Sensor Cut-line or short-circuit of cable and Flexible cable	Move the Carriages on the bed not to hit the Wiper Unit. Wiper Motor Replacement Wiper Unit Replacement Wiper Sensor Replacement Cable and Flexible Cable Replacement
0110	Input value from Linear Encoder is not changed by the Linear Encoder origin setup. When Motor stops during printing, expected movement is not completed on some head.	Read error of Linear Encoder. Read error of Encoder on Scan Motor side. Belt is not fixed to Carriage firmly.	Check whether Encoder Scale is between the slit of Encoder Module in a whole width of the machine. Check cable connection between Linear Encoder Board and Main Board. Check connection between Belt and Carriage. Linear Encoder replacement Scan Motor replacement Main Board replacement
0111	This error occurs when the machine performs the Auto Crop Mark Detection	Crop-Cut Adjustment in the Service Application or the Utility has not been performed correctly.	Carry out Crop-Cut Adjustment in Service Application or the Utility.
0112	Communication error with Cartridge IC driver	Cartridge IC driver is broken. Cartridge IC driver cable has short circuited or cut-line.	Ink cartridge IC sensor replacement
0130	There is a problem with Thermistor for Heater	Thermistor cable has short circuited or cutline. Thermistor has a problem.	Check cable connection around Thermistor. Thermistor replacement
Revised 4 0135	Heater temperature has reached 50°C and above.	Heater Cable connection has a problem. Thermistor has a problem.	Check Heater Check Thermistor
0240	There is a problem in the Scan/Feed Motor control.	The control of the Scan/Feed Motor is not done correctly. There is a cut-line in the Scan/Feed Motor control part on the Main Board.	Main Board replacement POWER UNIT replacement Revised 8
0250	Board on Head is broken	Board on Head is broken	Head Replacement

7-1 INSTALLATION CHECK LIST △18 △22

BN-20　INSTALLATION CHECK LIST

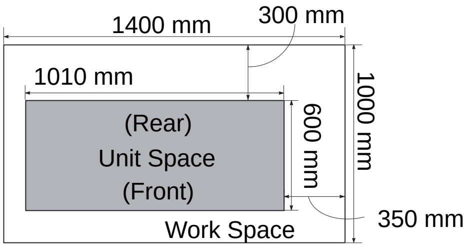
Date : ____________________

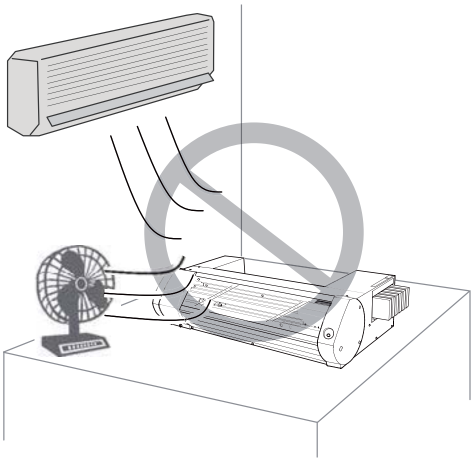
Customer Name : ____　Serial Number : ____________________

☐ Checking the place of installation

☐ There is a space necessary for installing the machine as below.

300 mm space is required at the back of the machine for handling a waste cartridge,
350 mm space is required at the right for handling ink cartridges.



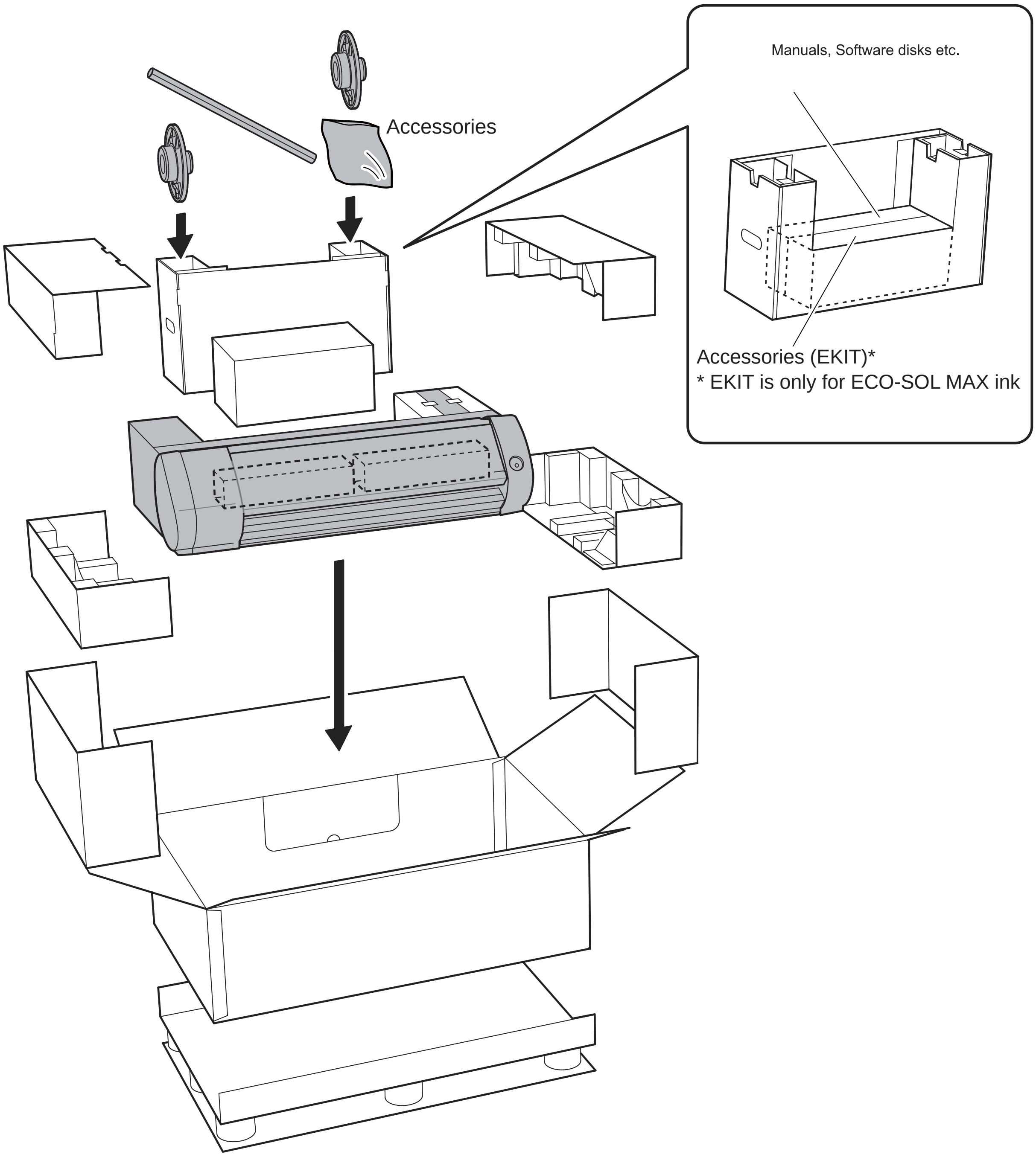


❗ During printing, the vertical and horizontal bandings become more visible where the machine is exposed by the air flow generated by air conditioner, fan, or wind.
Place the machine where there is less exposure of any sort of strong air flow or wind.

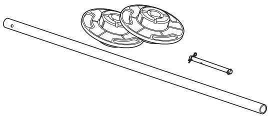
☐ Install the machine in a location that is level, stable, and able to bear the weight of the machine. The total weight of the machine 36 kg (79.4 lb.) or more. Installation in an unsuitable location may cause a major accident, including tipping over, falling, or collapsing.

☐ This machine is desktop type.The height of installation should be 0.6 m (23.7 in.) or higher above the work floor.
Please decide the height of installation so that you can easily reach areas such as the power switch when operating this machine.

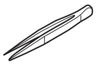
Unpacking


Accessories
Manuals, Software disks etc.
Accessories (EKIT)*
* EKIT is only for ECO-SOL MAX ink

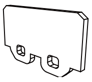
☐ Checking the Accessories



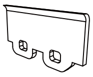
☐ Media flanges (2)
Media bar (1)
Mounting pin (1)



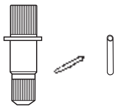
☐ Tweezers (1)



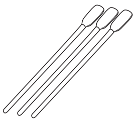
☐ Felt wiper (1)



☐ Wiper (1)

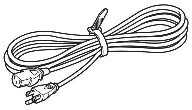


☐ Blade holder, blade,
Pin (1 each)

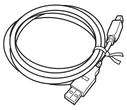


☐ Cleaning sticks (10)

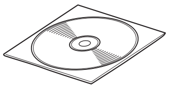
☐ V-KIT



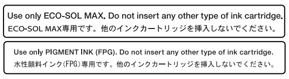
☐ Power code(1)



☐ USB cable(1)



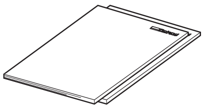
☐ Roland Software
Package(1)



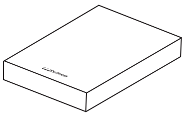
Use only ECO-SOL MAX. Do not insert any other type of ink cartridge.
ECO-SOL MAX専用です。他のインクカートリッジを挿入しないでください。

Use only PIGMENT INK (FPG). Do not insert any other type of ink cartridge.
水性顔料インク(FPG)専用です。他のインクカートリッジを挿入しないでください。

☐ Label for cartridge slot (one each for ECO-SOL MAX and FPG)

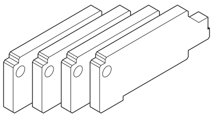


☐ To Ensure Safe Use (1)
First Step Guide (1)
MASTER GUIDE (1)
BN-20 VersaWorks Metallic Silver Ink Guide (1)

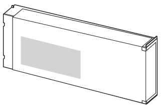


☐ Software RIP(1)

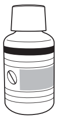
☐ E-KIT



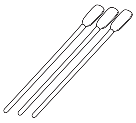
☐ dummy cartridge (4)



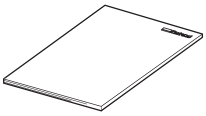
☐ SOL INK cleaning cartridge(1)



☐ Cleaning fluid (1)



☐ Cleaning stickes (10)

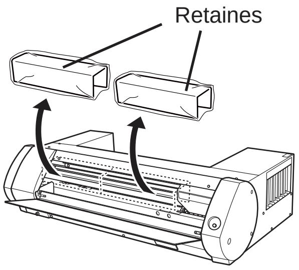


☐ Inkjet printer maintenance guide(1)

For ECO-SOL MAX ink, E-KIT is required.
For FPG ink, E-KIT is not necessary. Remove the E-KIT beforehand.

☐ Installation and Preparation

Set up following items in reference to First Step Guide.

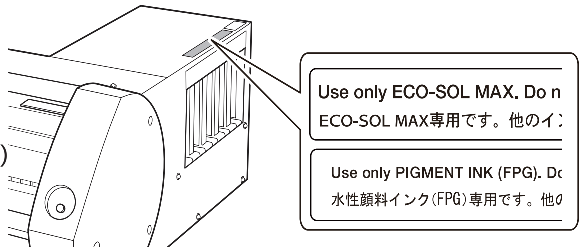


☐ Removing and storing the retainer
- The retainer is required when moving the machine to a different location. Store it carefully so that it does not get misplaced.

☐ Connecting the Power Cable

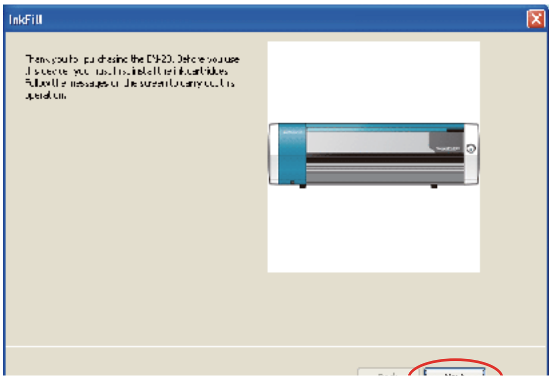
☐ Installing and Setting Up the Software
- Driver ＆ Utility
- R-Works

> Make sure if software is the latest version. Download updater from web site if it is avaialble.


Use only ECO-SOL MAX. Do n
ECO-SOL MAX専用です。他のイ
Use only PIGMENT INK (FPG). Do
水性顔料インク(FPG)専用です。他の

☐ Setting up the printer
- Place the label for the ink type that will be used.

☐ Filling ink
- Connect the machine to the computer by USB cable.(*)
- When the screen appears, click "Next" to proceed ink filling.



☐ Installing the Blade

☐ Assembling option stand

Assemble option stand in reference to PNS-24 ASSEMBLY INSTRUCTIONS.

☐ Upgrading the Firmware

Upgrade the firmware to the latest version.

☐ Installing VersaWorks

Refer to VersaWorks Installation Guide and install VersaWorks.

System requirements for installing the software

Operating System	Windows 10, 8.1 (32-bit edition/64-bit edition)
CPU	2.0 GHz or faster Intel Core 2 Duo recommended
RAM	2 GB or more recommended
Video card and monitor	A resolution of 1,280 x 1,024 or more
Free hard-disk space	40 GB or more recommended NTFS format
Other requirements	Internet connection and web browser Ethernet port, USB port

☐ Connecting to Roland@NET
- Get permission from the user and change the settings so that the software will be automatically updated and notified.

☐ Power-saving setting on PC
- Turn off the computer's power-saving functions which make the computer go stanby or sleep. It may stop a job being output.

☐ Installing Roland OnSupport

Donload Roland OnSupport, and install it.

☐ Basic Operations
- How to display OnSupport Help

☐ Environmental Settings (Language/Network)
- Checking the Network Connection

> To fully utilize OnSupport, you need to connect your computer to our OnSupport server via the Internet.
> If your computer is linked to the Internet, you will enable its connection to our OnSupport server only by installing OnSupport.

- Setting the E-mail Server
- What is “OnSupport Mail”?

☐ Registering/Loging in/Updating the Account
- Registering the Roland DG Account if the customer accepts it.

> When you register the Roland DG Account (Roland DG ID), you will be able to use OnSupport more effectively.
> You are to communicate with our OnSupport server in registering your account. E-mail address is required.

- How to update OnSupport

☐ Connecting and Managing the Devices

> When you make the management settings, you will be able to use “OnSupport Mail function” and the “Device Firmware Update function.” To update the firmware, you need to log in OnSupport with the computer which you made the management settings.

☐ The Basics

Explain following items in reference to Master Guide.

☐ How to Open the BN-20 Driver's Printing Preferences Screen

☐ How to Open the Utility Window / Exit the Utility

☐ How to Start the R-Works

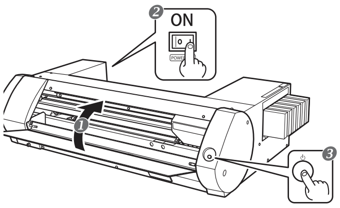
☐ Usable Media

- Media width
150 to 170 mm (5.9 to 6.7 inch)
200 to 235 mm (7.9 to 9.3 inch)
287 to 322 mm (11.3 to 12.7 inch)
348 to 383 mm (13.7 to 15.1 inch)
393 to 429 mm (15.5 to 16.9 inch)
439 to 474 mm (17.3 to 18.7 inch)
487 to 515 mm (19.2 to 20.3 inch)

☐ Important Points During Use
- We recommend using the machine at least once a week.

☐ Switching Power On and Off

!! IMPORTANT !!
Leave the main power on at all times. Maintenance operation is automatically carried out every 8 hours while the machine is not in use. Use the sub power switch for the daily power-on/off.



☐ Loading Media

☐ Bidirectional adjustment
- It is required only when using this machine for the first time or when changing the media.
- Bidirectional printing mode is for draft printing.

☐ Printing Tests and Normal Cleaning

☐ Calibrate Sheet Feeding Amount

☐ Starting Print Output

Starting point for print (base point) cannot be changed. This is always fixed on the right end.

☐ Stopping Print Output

☐ Job outputting from VersaWorks

Explain how to output a job from VersaWorks.

☐ Fully Utilizing the Machine

Explain following items in reference to Master Guide.

☐ Adjusting cutting
- Click [Cut Adjustment] on Utility window.

☐ Adjusting printing & cutting
- Click [Print_Cut Adjustment] on Utility window.

☐ Creating Data for Cutting / Printing & Cutting
- Set the color that the BN-20 driver will identify as the cutting line.
- Specify the line width for cutting lines.

☐ Crop Cut Adjustment

☐ Printing with Crop Marks

For printing with crop marks and cutting, we recommend to use Roland VersaWorks.

When using ECO-SOL MAX ink 5 colors, explain the items below.

☐ Using Metallic Silver Ink
- Shake it gently, and set it in before starting the operation for the day.

❗ We recommend Roland VersaWorks for printing with Metallic Silver ink.
As R-Works does not print crop marks, lamination we recommend for Metallic Silver ink printing cannot be applied.

When using Roland VersaWorks, refer to "Roland VersaWorks Quick Start Guide" and "BN-20 Roland VersaWorks Metallic Silver Ink Guide."

☐ Creation of Print Data Using Metallic Color (R-Works)

☐ Creation of Print Data Using Metallic Color (General Application for Drawing)

☐ Maintenance

Explain following items in reference to Master Guide.

☐ Switch the sub power on at least every 2 weeks
- When the sub power is on, operations to prevent the print heads from drying out are automatically performed.

☐ Maintain the temperature and humidity within the specified range
- Even when the machine is not in use, maintain the temperature between 5 to 40ºC (41 to 104ºF), with a relative humidity of 20 to 80%,

☐ Checking Ink Levels and Replacing
- Checking Ink Levels : Ink levels can be checked in the Ink tab of the Utility window
- How to Replace Ink Cartridges

☐ Daily Maintenance
- Maintenance of Ink Cartridges
  The ink ingredients have a tendency to separate and settle. Metallic silver ink and white ink is particularly prone to
  separation.
- Cleaning
  Wipe off any ink and grime on the media path.Use neutral detergent diluted with water, and a damp cloth to wipe off ink and grime.

☐ Replacing the Waste Cartridge
- When the waste cartridge is filled with waste fluid, the Utility window automatically opens and displays a message in the Status column that prompts the replacement of the cartridge.

> When the waste cartridge is full, it is 1510g totally.

☐ Care and Maintenance of the Print Heads
- Daily care and maintenance
- Periodical care and maintenance

☐ Periodical Cleaning Maintenance
- About Periodical Cleaning Menus
- Manual Head Cleaning

☐ Replacing Consumable Parts
- Replacing the Wiper
- Replacing the Felt Wiper
- Replacing the Cutter Blade

☐ When Moving the Unit
- Procedures from Preparing to Move Through Reinstalling In the [Opton] tab, click [Pump Up].

☐ Others

☐ About print quality in bidirectional printing
- There can be horizontal or vertical bandings appear in print results.It is provided as a “Draft” mode.

☐ Clock control of the machine
- Utility writes the clock in the machine.When the main power is turned off,the clock of the machine reverts back to the default, that is 2000/01/01,

☐ Guide them to refer to the User's Manual when an error message is displayed.
- Explain to restart the machine and check what happens before calling for inquiry when [SERVICE CALL] is displayed, since it occasionally solves the problem just by restarting.

☐ Head capping
- When uncapped condition lasts 2 minutes, the head is automatically capped.

☐ Consumable Parts and Replacement Cycle

Description	Life Expectancy
Print Head	6 billion shots / nozzle (6,000,000K shots)
Wiper	Wiping 3000 times
Felt Wiper	Wiping 800 times
Cap Top	6 months
Scan Motor	3000 hours
Tool Motor	3000 hours
Ink Tubing	3000 hours
Sponge under the wiper unit	6 months
Cutter Protection	Replace it depending on the scratches
Pinch Roller	Replace it depending on the wear

BN-20A INSTALLATION CHECK LIST △22

Date : ____________________

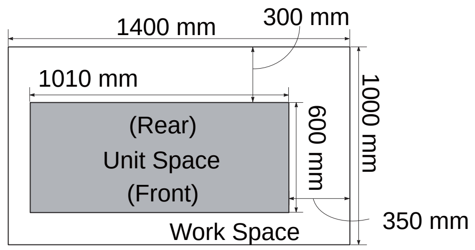
Customer Name : ______________________________________

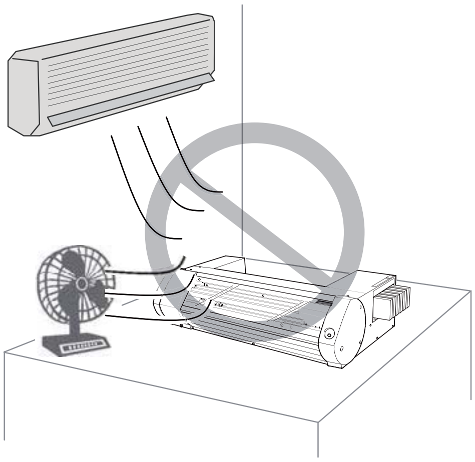
Serial Number : ___________________________

☐ Checking the place of installation

☐ There is a space necessary for installing the machine as below.

300 mm space is required at the back of the machine for handling a waste cartridge,
350 mm space is required at the right for handling ink cartridges.



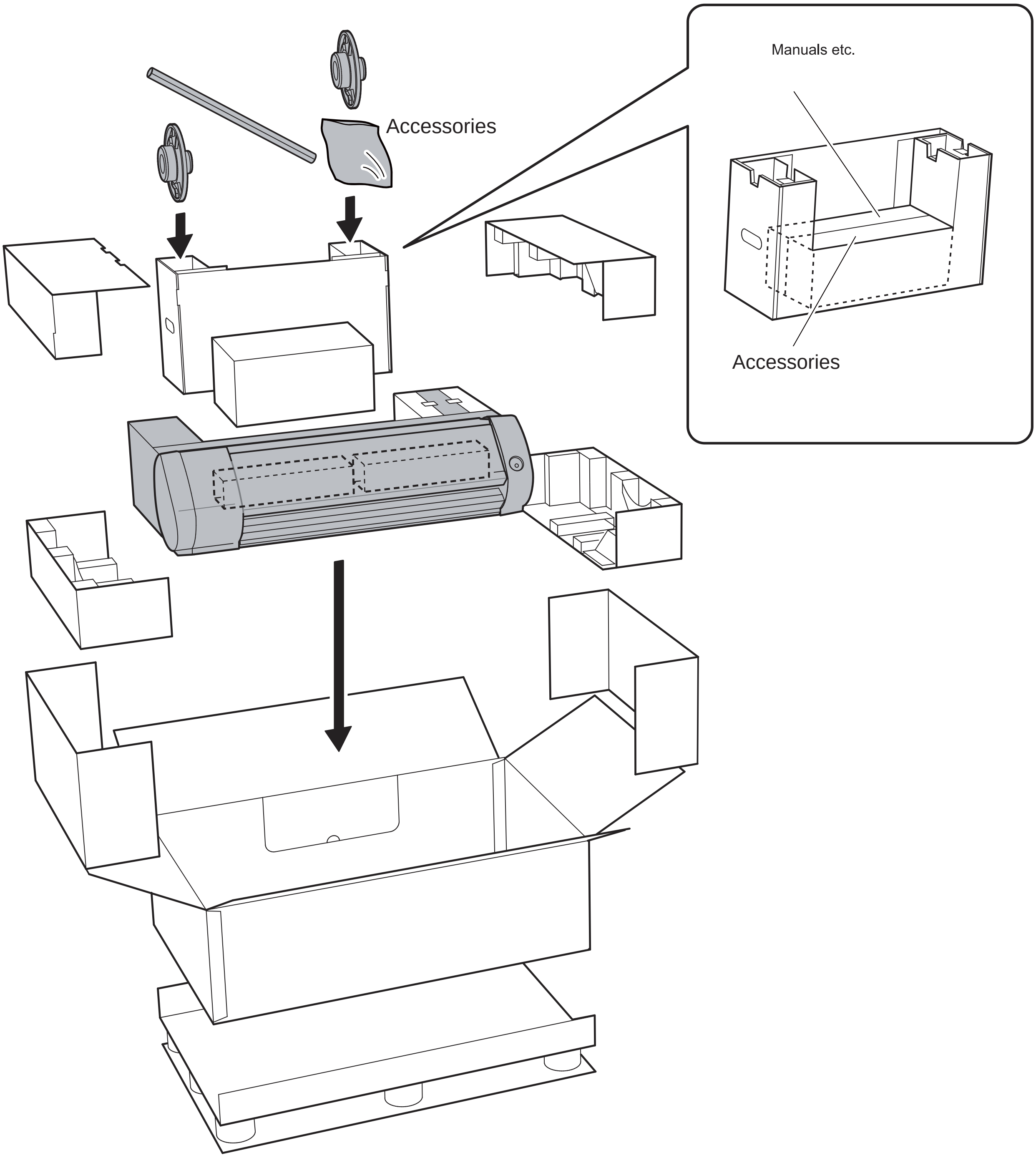


❗ During printing, the vertical and horizontal bandings become more visible where the machine is exposed by the air flow generated by air conditioner, fan, or wind.
Place the machine where there is less exposure of any sort of strong air flow or wind.

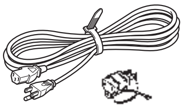
☐ Install the machine in a location that is level, stable, and able to bear the weight of the machine. The total weight of the machine 36 kg (79.4 lb.) or more. Installation in an unsuitable location may cause a major accident, including tipping over, falling, or collapsing.

☐ This machine is desktop type.The height of installation should be 0.6 m (23.7 in.) or higher above the work floor.
Please decide the height of installation so that you can easily reach areas such as the power switch when operating this machine.

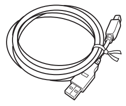
Unpacking


Accessories
Manuals etc.
Accessories

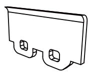
Checking the Accessories



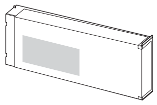
☐ Power code (1)
Power plug adapter (1) *1
*1：Included only for 100V spec



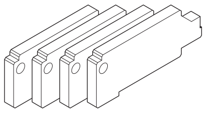
☐ USB cable (1)



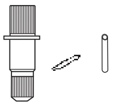
☐ Wiper(1)



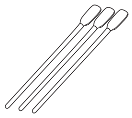
☐ SOL INK cleaning cartridge(1)



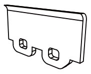
☐ Dummy cartridge(4)



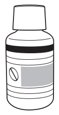
☐ Blade holder,
blade, pin（1 each）



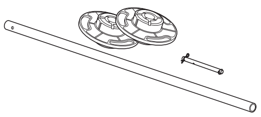
☐ Cleaning sticks(10)



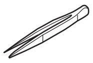
☐ Felt wiper(1)



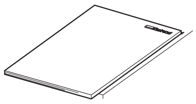
☐ Cleaning liquid(1)



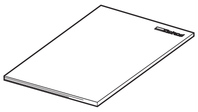
☐ Media flanges(2)
Media bar(1)
Mounting pin(1)



☐ Tweezers(1)



☐ First Step Guide(1)



☐ To Ensure Safe Use (1)

☐ Installation and Preparation

Set up following items in reference to "Machine Installation" and "Preparation Before Use" Web manual .

☐ Removing and storing the retainer
- The retainer is required when moving the machine to a different location.
Store it carefully so that it does not get misplaced.

☐ Connecting the Power Cable

☐ Installing and Setting Up the Software
- Driver ＆ Utility

> Make sure if software is the latest version. Download updater from web site if it is avaialble.

☐ Installing VersaWorks

Refer to VersaWorks Installation Guide and install VersaWorks.

System requirements for installing the software

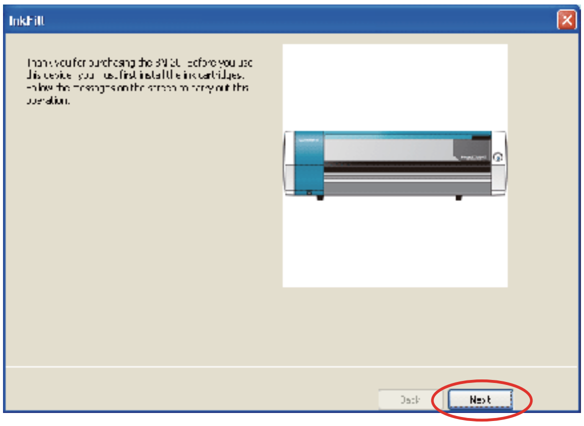
Operating System	Windows 10, 8.1 (32-bit edition/64-bit edition)
CPU	2.0 GHz or faster Intel Core 2 Duo recommended
RAM	2 GB or more recommended
Video card and monitor	A resolution of 1,280 x 1,024 or more
Free hard-disk space	40 GB or more recommended NTFS format
Other requirements	Internet connection and web browser Ethernet port, USB port

☐ Connecting to Roland@NET
- Get permission from the user and change the settings so that the software will be automatically updated and notified.

☐ Power-saving setting on PC
- Turn off the computer's power-saving functions which make the computer go stanby or sleep. It may stop a job being output.

☐ Filling ink

- Connect the machine to the computer by USB cable.(*)
- When the screen appears, click "Next" to proceed ink filling.



☐ Installing the Blade

☐ Assembling option stand

Assemble option stand in reference to PNS-24 ASSEMBLY INSTRUCTIONS.

☐ Upgrading the Firmware

Upgrade the firmware to the latest version.

The Basics

Explain following items in reference to User's Manual.

☐ How to Open the BN-20 Driver's Printing Preferences Screen

☐ How to Open the Utility Window / Exit the Utility

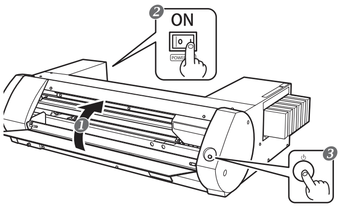
☐ Usable Media

- Media width
150 to 170 mm (5.9 to 6.7 inch)
200 to 235 mm (7.9 to 9.3 inch)
287 to 322 mm (11.3 to 12.7 inch)
348 to 383 mm (13.7 to 15.1 inch)
393 to 429 mm (15.5 to 16.9 inch)
439 to 474 mm (17.3 to 18.7 inch)
487 to 515 mm (19.2 to 20.3 inch)

☐ Important Points During Use
- We recommend using the machine at least once a week.

☐ Switching Power On and Off

!! IMPORTANT !!
Leave the main power on at all times. Maintenance operation is automatically carried out every 8 hours while the machine is not in use. Use the sub power switch for the daily power-on/off.



☐ Loading Media

☐ Bidirectional adjustment
- It is required only when using this machine for the first time or when changing the media.
- Bidirectional printing mode is for draft printing.

☐ Printing Tests and Normal Cleaning

☐ Calibrate Sheet Feeding Amount

☐ Starting Print Output

Starting point for print (base point) cannot be changed. This is always fixed on the right end.

☐ Stopping Print Output

☐ Job outputting from VersaWorks

Explain how to output a job from VersaWorks.

☐ Fully Utilizing the Machine

Explain following items in reference to User's Manual.

☐ Adjusting cutting
- Click [Cut Adjustment] on Utility window.

☐ Adjusting printing & cutting
- Click [Print_Cut Adjustment] on Utility window.

☐ Creating Data for Cutting / Printing & Cutting
- Set the color that the BN-20 driver will identify as the cutting line.
- Specify the line width for cutting lines.

☐ Crop Cut Adjustment

☐ Printing with Crop Marks

☐ Maintenance

Explain following items in reference to User's Manual.

☐ Switch the sub power on at least every 2 weeks
- When the sub power is on, operations to prevent the print heads from drying out are automatically performed.

☐ Maintain the temperature and humidity within the specified range
- Even when the machine is not in use, maintain the temperature between 5 to 40ºC (41 to 104ºF), with a relative humidity of 20 to 80%,

☐ Checking Ink Levels and Replacing
- Checking Ink Levels : Ink levels can be checked in the Ink tab of the Utility window
- How to Replace Ink Cartridges

☐ Daily Maintenance
- Maintenance of Ink Cartridges
  The ink ingredients have a tendency to separate and settle. Metallic silver ink is particularly prone to separation.
- Cleaning
  Wipe off any ink and grime on the media path.Use neutral detergent diluted with water, and a damp cloth to wipe off ink and grime.

☐ Replacing the Waste Cartridge
- When the waste cartridge is filled with waste fluid, the Utility window automatically opens and displays a message in the Status column that prompts the replacement of the cartridge.

> When the waste cartridge is full, it is 1510g totally.

☐ Care and Maintenance of the Print Heads
- Daily care and maintenance
- Periodical care and maintenance

☐ Periodical Cleaning Maintenance
- About Periodical Cleaning Menus
- Manual Head Cleaning

☐ Replacing Consumable Parts
- Replacing the Wiper
- Replacing the Felt Wiper
- Replacing the Cutter Blade

☐ When Moving the Unit
- Procedures from Preparing to Move Through Reinstalling In the [Opton] tab, click [Pump Up].

☐ Others

☐ About print quality in bidirectional printing
- There can be horizontal or vertical bandings appear in print results.It is provided as a “Draft” mode.

☐ Clock control of the machine
- Utility writes the clock in the machine.When the main power is turned off,the clock of the machine reverts back to the default, that is 2000/01/01,

☐ Guide them to refer to the User's Manual when an error message is displayed.
- Explain to restart the machine and check what happens before calling for inquiry when [SERVICE CALL] is displayed, since it occasionally solves the problem just by restarting.

☐ Head capping
- When uncapped condition lasts 2 minutes, the head is automatically capped.

☐ Consumable Parts and Replacement Cycle

Description	Life Expectancy
Print Head	6 billion shots / nozzle (6,000,000K shots)
Wiper	Wiping 3000 times
Felt Wiper	Wiping 800 times
Cap Top	6 months
Scan Motor	3000 hours
Tool Motor	3000 hours
Ink Tubing	3000 hours
Sponge under the wiper unit	6 months
Cutter Protection	Replace it depending on the scratches
Pinch Roller	Replace it depending on the wear

BN-20D INSTALLATION CHECK LIST △25

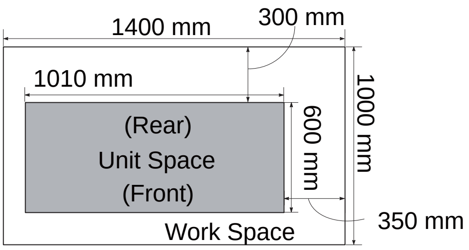
Date : ____________________

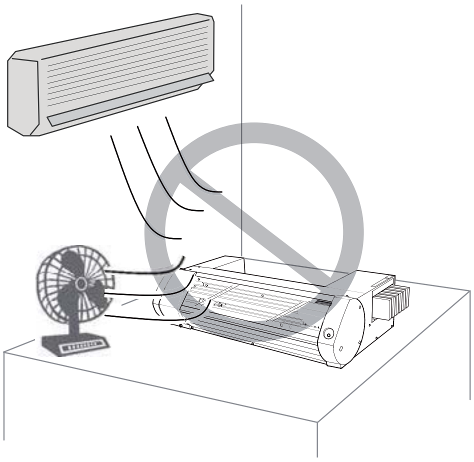
Customer Name : ____________________________________ Serial Number : ________________________

☐ Checking the place of installation

☐ There is a space necessary for installing the machine as below.

300 mm space is required at the back of the machine for handling a waste cartridge,
350 mm space is required at the right for handling ink cartridges.



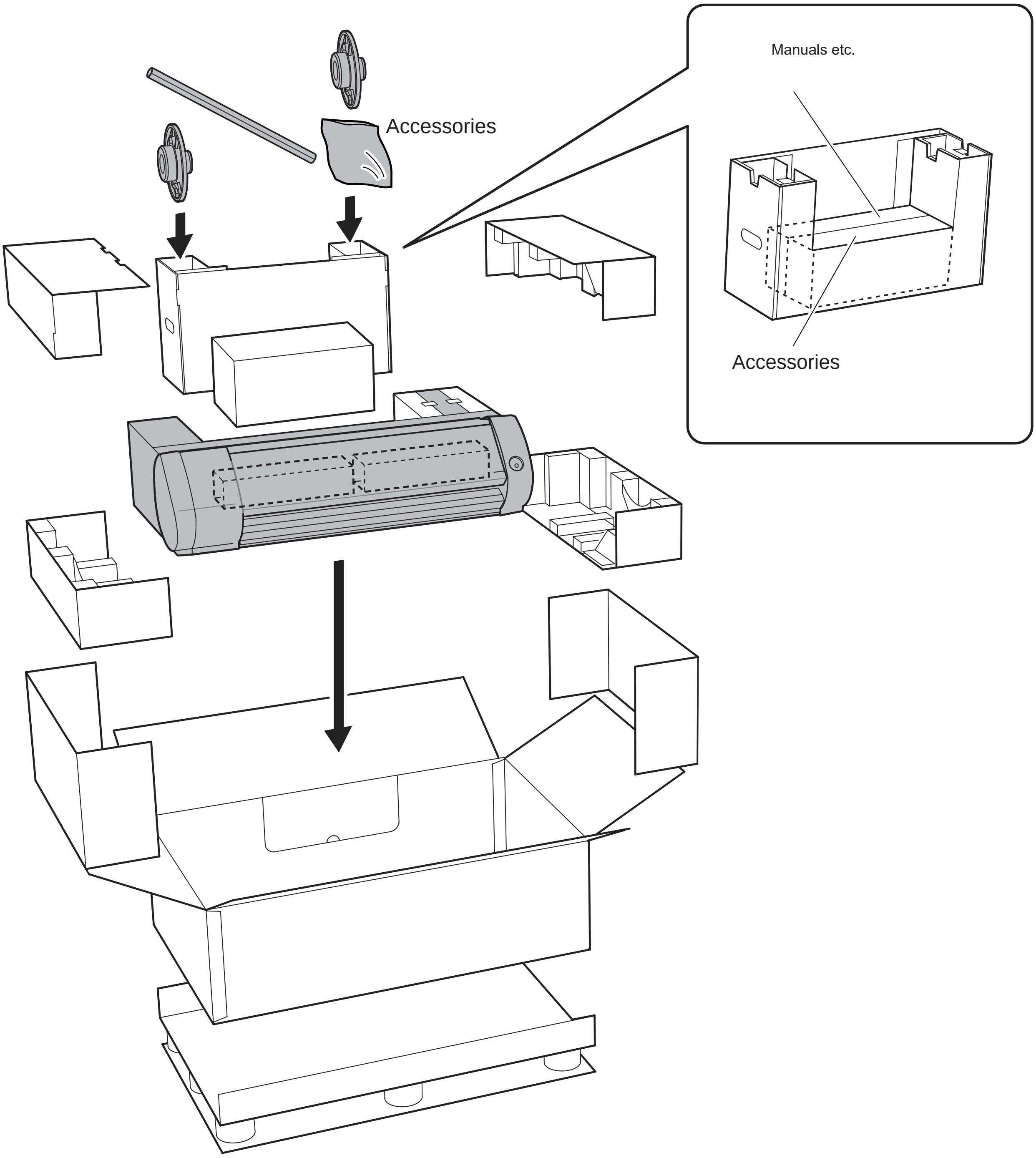


During printing, the vertical and horizontal bandings become more visible where the machine is exposed by the air flow generated by air conditioner, fan, or wind.
Place the machine where there is less exposure of any sort of strong air flow or wind.

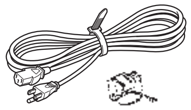
☐ Install the machine in a location that is level, stable, and able to bear the weight of the machine. The total weight of the machine 36 kg (79.4 lb.) or more. Installation in an unsuitable location may cause a major accident, including tipping over, falling, or collapsing.

☐ This machine is desktop type.The height of installation should be 0.6 m (23.7 in.) or higher above the work floor.
Please decide the height of installation so that you can easily reach areas such as the power switch when operating this machine.

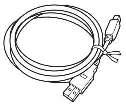
Unpacking


Accessories
Manuals etc.
Accessories

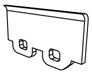
☐ Checking the Accessories



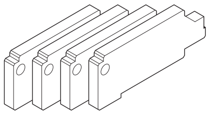
☐ Power code (1)
Power plug adapter (1) *1
*1：Included only for 100V spec



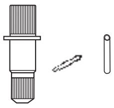
☐ USB cable (1)



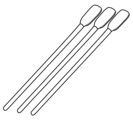
☐ Wiper(1)



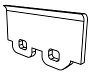
☐ Dummy cartridge(4)



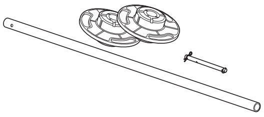
☐ Blade holder,
blade, pin（1 each)



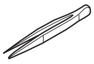
☐ Cleaning sticks(10)



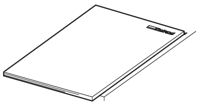
☐ Felt wiper(1)



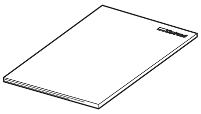
☐ Media flanges(2)
Media bar(1)
Mounting pin(1)



☐ Tweezers(1)



☐ First Step Guide(1)



☐ To Ensure Safe Use (1)

☐ Installation and Preparation

Set up following items in reference to "Machine Installation" and "Preparation Before Use" on Download Center .

☐ Removing and storing the retainer
- The retainer is required when moving the machine to a different location.
Store it carefully so that it does not get misplaced.

☐ Connecting the Power Cable

☐ Installing and Setting Up the Software
- Driver & Utility

Make sure if software is the latest version. Download updater from web site if it is avaialble.

☐ Installing VersaWorks

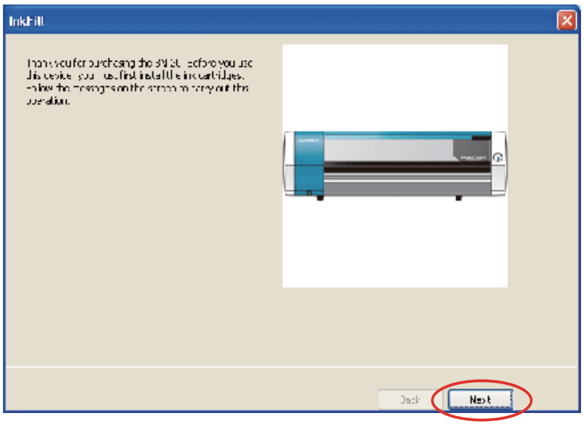
Download VersaWorks from Download Center and install VersaWorks.

System requirements for installing the software

☐ Connecting to Roland@NET
- Get permission from the user and change the settings so that the software will be automatically updated and notified.

☐ Power-saving setting on PC
- Turn off the computer's power-saving functions which make the computer go stanby or sleep. It may stop a job being output.

☐ Filling ink
- Connect the machine to the computer by USB cable.(*)
- When the screen appears, click "Next" to proceed ink filling.



☐ Installing the Blade

☐ Assembling option stand

Assemble option stand in reference to PNS-24 ASSEMBLY INSTRUCTIONS.

☐ Upgrading the Firmware

Upgrade the firmware to the latest version.

The Basics

Explain following items in reference to User's Manual.

☐ How to Open the Utility Window / Exit the Utility

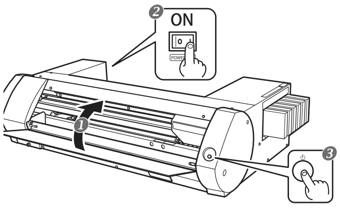
☐ Usable Media

- Media width
150 to 170 mm (5.9 to 6.7 inch)
200 to 235 mm (7.9 to 9.3 inch)
287 to 322 mm (11.3 to 12.7 inch)
348 to 383 mm (13.7 to 15.1 inch)
393 to 429 mm (15.5 to 16.9 inch)
439 to 474 mm (17.3 to 18.7 inch)
487 to 515 mm (19.2 to 20.3 inch)

☐ Important Points During Use
- We recommend using the machine at least once a week.

☐ Switching Power On and Off

!! IMPORTANT !!
Leave the main power on at all times. Maintenance operation is automatically carried out every 8 hours while the machine is not in use. Use the sub power switch for the daily power-on/off.



☐ Loading Media

☐ Bidirectional adjustment
- It is required only when using this machine for the first time or when changing the media.
- Bidirectional printing mode is for draft printing.

☐ Printing Tests and Normal Cleaning

☐ Calibrate Sheet Feeding Amount

☐ Starting Print Output

Starting point for print (base point) cannot be changed. This is always fixed on the right end.

☐ Stopping Print Output

☐ Job outputting from VersaWorks

Explain how to output a job from VersaWorks.

☐ Fully Utilizing the Machine

Explain following items in reference to User's Manual.

☐ Adjusting cutting
- Click [Cut Adjustment] on Utility window.

☐ Creating Data for Cutting / Printing & Cutting
- Specify the line width for cutting lines.

☐ Maintenance

Explain following items in reference to User's Manual.

☐ Switch the sub power on at least every 2 weeks
- When the sub power is on, operations to prevent the print heads from drying out are automatically performed.

☐ Maintain the temperature and humidity within the specified range
- Even when the machine is not in use, maintain the temperature between 5 to 40ºC (41 to 104ºF), with a relative humidity of 20 to 80%,

☐ Checking Ink Levels and Replacing
- Checking Ink Levels : Ink levels can be checked in the Ink tab of the Utility window
- How to Replace Ink Cartridges

☐ Daily Maintenance
- Maintenance of Ink Cartridges
  The ink ingredients have a tendency to separate and settle. Metallic silver ink is particularly prone to separation.
- Cleaning
  Wipe off any ink and grime on the media path.Use neutral detergent diluted with water, and a damp cloth to wipe off ink and grime.

☐ Replacing the Waste Cartridge
- When the waste cartridge is filled with waste fluid, the Utility window automatically opens and displays a message in the Status column that prompts the replacement of the cartridge.

> When the waste cartridge is full, it is 1510g totally.

☐ Care and Maintenance of the Print Heads
- Daily care and maintenance
- Periodical care and maintenance

☐ Periodical Cleaning Maintenance
- About Periodical Cleaning Menus
- Manual Head Cleaning

☐ Replacing Consumable Parts
- Replacing the Wiper
- Replacing the Felt Wiper
- Replacing the Cutter Blade

☐ When Moving the Unit
- Procedures from Preparing to Move Through Reinstalling In the [Opton] tab, click [Pump Up].

☐ Others

☐ About print quality in bidirectional printing
- There can be horizontal or vertical bandings appear in print results.It is provided as a “Draft” mode.

☐ Clock control of the machine
- Utility writes the clock in the machine.When the main power is turned off,the clock of the machine reverts back to the default, that is 2000/01/01,

☐ Guide them to refer to the User's Manual when an error message is displayed.
- Explain to restart the machine and check what happens before calling for inquiry when [SERVICE CALL] is displayed, since it occasionally solves the problem just by restarting.

☐ Head capping
- When uncapped condition lasts 2 minutes, the head is automatically capped.

Consumable Parts and Replacement Cycle

Description	Life Expectancy
Print Head	6 billion shots / nozzle (6,000,000K shots)
Wiper	Wiping 3000 times
Felt Wiper	Wiping 800 times
Cap Top	6 months
Scan Motor	3000 hours
Tool Motor	3000 hours
Ink Tubing	3000 hours
Sponge under the wiper unit	6 months
Cutter Protection	Replace it depending on the scratches
Pinch Roller	Replace it depending on the wear

7-2 Maintenance Check List

18 21 22 25

BN-20/BN-20A/BN-20D Maintenance Check List

Date:__________________

Customer Name :____________________________________ Serial Number :________________________

Check items		Operation points	Check
Interview the customer		Ask the customer if there is something that he/she is concerned about.	☐ Done
Output / Get Report before maintenance		Get the system report by ServiceApp, Report, Save.	☐ Done
Check drain bottle		When the waste cartridge weights exceeds 1510g, replace it and give an explanation to the customer.	☐ Good ☐ Replacement
Upgrade the firmware to the latest version		Upgrade the firmware if the installed firmware is not the latest version.	☐ OK
Check Consumable Parts	Head	Determine if it should be replaced based on the SHOT COUNT in the History Report, the test print result and the customer's interview.	☐ Good ☐ Replacement Done ☐ Reset
		Perform manual cleaning by using cleaning sticks and cleaning liquid.	☐ Perform Cleaning
		Output the test patterns of BIAS to check the error, and perform adjustment if necessary.	☐ Good ☐ Adjustment Done
	Scan Motor	Determine if it should be replaced based on MOTOR ERROR and MOTOR HOURS S in the History Report, or on the motor sound when performing a print and the customer's interview. Put grease on the gear if you replace the motor. Replacement Cycle : 3,000 hours	☐ Good ☐ Replacement Done ☐ Reset
	Wiper	Determine if it should be repalced on the performance of the cleaning or the wiping times of the history report. Replacement Cycle : Wiping count 3,000 times	☐ Perform Cleaning ☐ Replacement Done
	Felt Wiper	Determine if it should be repalced on the performance of the cleaning or the wiping times of the history report. Replacement Cycle : Wiping count 800 times	☐ Perform Cleaning ☐ Replacement Done
	Linear Encoder Scale 1	Check if the Encoder Scale has any dirt or dust or any ink on. And, check the Encoder Module, too.	☐ Perform Cleaning ☐ Replacement Done
	Linear Encorder Scale 2	Perform ServiceApp, Linear Encoder [Set Up]. If result is not good, upgrade the firmware and the RVW and perform cleaning and replacement if necessary.	☐ Good ☐ RVW, Firmware Upgrading ☐ Perform Cleaning ☐ Replacement Done
	Cap Top	Determine if it should be replaced based on the performance of the cleaning or the period from the time when the Cap Top was repalced last time. Replacement Cycle : 6 months	☐ Good ☐ Perform Cleaning ☐ Replacement Done
	Sponge under the Wipers	Determine if it should be replaced diagnosing from the appearance of it. Replacement Cycle : 6 months	☐ Good ☐ Replacement Done
	Wiper Scraper	Perform manual cleaning using cleaning sticks and cleaning liquid. Replace it depending on the performance or appearance.	☐ Good ☐ Perform Cleaning ☐ Replacement Done
Check Mechanical Parts	Carriage Belt	Check if the carriage belt does not touch the upper end or lower end of the drive pulley and idle pulley when the head carriage moves in the full width. Adjust the belt position, if necessary.	☐ Good ☐ Adjustment Done
	Cutter Protection	Replace it depending on the scratches.	☐ Good ☐ Replacement Done
	Pinch Roller	Check if it is not worn out or not dirty, or not deformed. Check if it rotates smoothly.	☐ Good ☐ Replacement Done
	Grid Roller	Remove foreign substances put on it by using a brush.	☐ Done
Check printing		Check that there is no problem with the printing operation and printing result.	☐ Done
Check cutting		Check that there is no problem with the cutting operation and cutting result.	☐ Done
Output / Get Report after maintenace		Obtain the report by ServiceApp [Report].	☐ Done

7-3 Specifications 22 25

Machine Specification

BN-20/BN-20A/BN-20D

		BN-20/BN-20A/BN-20D
Printing technology		Piezoelectric inkjet
Media	Width(*1)	150 to 515 mm (5.9 to 20.3 in.)
	Thickness	Maximum 1.0 mm (39 mil) with liner, for printing Maximum 0.4 mm (16 mil) with liner and 0.22 mm (9 mil) without liner, for cutting
	Roll outer diameter	Maximum 150 mm (5.9 in.)
	Roll weight	Maximum 6 kg (13.2 lb.)
	Core diameter	76.2 mm (3 in.) or 50.8 mm (2 in.)
Printing/cutting width (*2)		Maximum 480 mm (18.9 in.)
Ink cartridges	Types	ECO-SOL MAX: 220-cc cartridge MAX/2/3
	Colors	BN-20 Five colors (cyan, magenta, yellow, black, white) Five colors (cyan, magenta, yellow, black, metallic silver) Four colors (cyan, magenta, yellow, and black) BN-20A Four colors (cyan, magenta, yellow, and black) BN-20D Five colors (cyan, magenta, yellow, black, white)
Printing resolution (dots per inch)		Maximum 1,440 dpi
Cutting blade	Type	Roland CAMM-1 series compatible
	Blade offset	0.25 mm (9 mil)
Cutting speed		1 to 15 cm/s
Blade force		30 to 300 gf
Software resolution (when cutting)		0.025 mm/step
Distance accuracy (when printing) (*3) (*4)		Error of less than ±0.3% of distance traveled, or ±0.3 mm, whichever is greater
Distance accuracy (when cutting) (*3) (*5)		Error of less than ±0.4% of distance traveled, or ±0.3 mm, whichever is greater
Repeatability (when cutting) (*3) (*6)		±0.1 mm or less
Alignment accuracy for printing and cutting (*3) (*7)		±0.5 mm or less
Alignment accuracy for printing and cutting when reloading media (*3) (*8)		Error of less than ±0.5% of distance traveled, or ±3 mm, whichever is greater
Print heater (*9)		Temperature: 35°C (95 °F) (fixed)
Connectivity		USB (compliant with Universal Serial Bus Specification Revision 2.0)
Power-saving function		Automatic sleep feature
Power requirements		AC 100 to 240 V ±10 %, 1.0 A, 50 / 60 Hz
Power consumption	During operation	Approx. 90 W
	Sleep mode	Approx. 5.5 W
Acoustic noise level	During operation	62 dB (A) or less
	During standby	42 dB (A) or less
Dimensions		1009 (W) x 582 (D) x 293 (H) mm (39.7 (W) x 22.9 (D) x 11.5 (H) in.)
Weight		36 kg (79.4 lb.)
Installation Environment	Power on (*10)	Temperature: 20 to 32°C (68 to 90 °F), humidity: 35 to 80%RH (non-condensing)
	Power off	Temperature: 5 to 40°C (41 to 104°F), humidity: 20 to 80%RH (non-condensing)
Accessories		BN-20 Power cord, USB cable, blade, blade holder, Roland Software Package, Software RIP (VersaWorks), User's Manual, etc. BN-20A Power cord, USB cable, blade, blade holder, Manual, etc. BN-20D Power cord, USB cable, blade, blade holder, Manual, etc.

(*1)

It must be within the ranges shown below:

- 150 to 170 mm (5.9 to 6.7 inch)
- 200 to 235 mm (7.9 to 9.3 inch)
- 287 to 322 mm (11.3 to 12.7 inch)
- 348 to 383 mm (13.7 to 15.1 inch)
- 393 to 429 mm (15.5 to 16.9 inch)
- 439 to 474 mm (17.3 to 18.7 inch)
- 487 to 515 mm (19.2 to 20.3 inch)

(*2)

The length of printing or cutting is subject to the limitations of the program.

(*3)

- Media type: Media specified by Roland DG Corp.
- Temperature: 25°C (77°F), humidity: 50%
- Roll media must be loaded correctly.
- Front margin: 35 mm or more
- Excluding expansion/contraction of the media
- All correction or adjustment function of this machine has been made properly.

(*4)

With Roland PET film, print travel: 1 m

(*5)

Range for assured repetition accuracy: Length 1,000 mm

(*6)

Range for assured repetition accuracy : Length 1,000 mm

(*7)

- Provided that media length is under 1,000 mm
- Excludes the effects of slanted movement and of expansion and contraction of the media.

(*8)

- Data size : 1,000 mm in the media-feed direction, 480 mm in the carriage-movement direction
- No lamination
- Automatic detection of crop marks at 4 points when media is reloaded.
- Excluding possible shift caused by expansion/contraction of the media and/or by reloading the media.

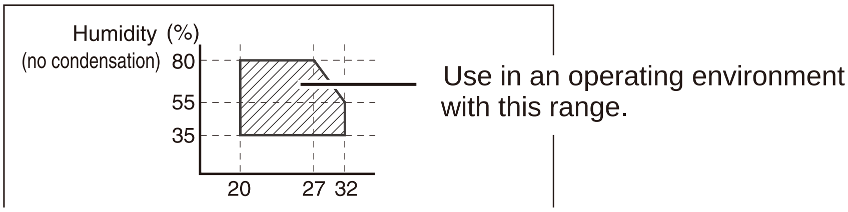
(*9)

Warm-up is required after power up. This may require 5 to 20 minutes, depending on the operating environm

- Depending on the ambient temperature and media width, the temperature may fail to be reached 35 (°F).

(*10)

Operating environment



Use in an operating environment with this range.